NBS

Technical Note No. 206-2

THE NORMAL PHASE VARIATIONS OF THE 18 KC/S SIGNALS FROM NBA OBSERVED AT MAUI, HAWAII

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U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS

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Issued March 19, 1964

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Signals from NBA Observed at Maui, Hawaii

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Observations of the normal phase variations of the 18 kc/s signals radiated from the Canal Zone and received in Maui, Hawaii are given in the form of monthly averages and standard deviations at five minute intervals. The relations between the diurnal phase variations and the diurnal variation in the length of sunlit path are shown. The calculated mean diurnal change in effective height of reflection is 13.7 km. Values of the short term phase differences are also given.

1. Introduction

This is the second of a series of reports giving data on the normal average phase variations of various VLF signals received over long paths. This report deals with the reception at Maui, Hawaii, during 1962 of the 18 kc/s signals from NBA (in the Canal Zone), a path length of 8300 km. The first note in the series [Brady et al., 1963] dealt with the reception of NBA at Frankfurt in Germany.

It is the purpose of these reports merely to present the reduced phase data, which show seasonal and diurnal effects, with a minimum of discussion. Subsequent papers will deal with specific aspects of the data from all paths.

2. Analysis of Data

All the phase data used in these reports have been recorded, scaled, and reduced in a uniform manner, as described in the first of the series. Tables 1-12 contain the averages (AVER) for each month of the phase, its Standard Deviation (SDV), and the number of observations (NO) used in deducing these quantities. These values are given at 5 minute intervals. Further details will be found in the first paper.

3. Diurnal Variation of Phase

The mean and standard deviations from these tables are plotted in figures 1 and 2. In these figures, which show the shape of the diurnal variation, the mean value of the phase when the path is totally illuminated has been arbitrarily set at zero. The left hand

scale for each month is the diurnal phase scale, in degrees, while on the right of each figure is the standard deviation scale, also in degrees. Ground sunrise and sunset at each end of the path are denoted by SR and SS on the diurnal phase curves.

As in the case of the NBA-Frankfurt path, the mean diurnal phase change exhibits the trapezoidal shape [Pierce 1957; Crombie et al., 1958] characteristic of long paths at medium latitudes.

3.1 Seasonal Variation in Magnitude of Diurnal Phase Change

The mean diurnal phase variation for each month is shown in figure 3. Fourier analysis of these points yields the annual and semiannual components, which are also shown in the figure. The average value for the twelve months is approximately 275° with a semiannual variation of $\pm 20^\circ$, and an annual variation of the same magnitude. It will be seen that the diurnal phase change is least during the equinoxes and greatest in winter and summer. Using the calculations of Wait [1959, 1962], which relate the diurnal phase change to the corresponding change in effective height of the ionosphere, it is found that the equivalent diurnal height change averaged over the year is approximately 13.7 km. During winter and summer it is increased to 15 km and falls to 12.5 km during the equinoxes. The scatter shown by the experimental points in figure 3 is quite large however, and the fitted curves are probably not significant.

3.2 Variation of Phase with Amount of Illuminated Path

It was noted earlier, in accordance with other studies, that the diurnal phase delay follows the diurnal variation of the length of the path in darkness (or daylight). This is brought out more clearly in figures 4 and 5. In these two figures the mean phase variations near sunrise and sunset for the months of March, June, September, and December have been plotted on curves showing the percentage of the path in darkness at ground level and at a height of 80 km, for the four months. In making these calculations [Brady and Crombie, 1964] it has been assumed that the screening height of the earth's atmosphere is 30 km. Thus the two calculated curves in each case represent solar zenith angles of 90° and 97°, approximately. The phase curves and the curves showing the percentage of path which is illuminated have been fitted together so that 100% on the illumination scale also represents 100% of the diurnal variations.

3.3 Sunrise

The figures show that the smoothed morning phase change follows closely the length of illuminated path. Because of the oscillatory variations in phase which occur, especially towards the end of the sunrise variation, it has not proved possible to determine the altitude at which the morning phase shift and sunrise are most closely related. The oscillatory phase variations are believed to be due to interference between two waveguide modes excited in the nighttime portion of the path [Crombie, 1964]. The fading period suggests that for this path the phase velocities of the two interfering modes are more nearly equal than in the case of the NBA-Frankfurt path.

3.4 Sunset

Figures 4 and 5 show that the dependence of the evening phase shift on the fraction of the path which is illuminated is much weaker than at sunrise. In particular, although the major phase shift commences about the time of sunset at the transmitter, the phase does not reach its final value until about 2 hours after sunset (even at 80 km) occurs at the receiver. The curve for November (figure 1) is of particular interest in that it suggests that the final effective height of reflection for this month may not be reached until just before sunrise occurs.

4. Phase Stability

It was pointed out in the first paper of this series that both the day-to-day phase stabilities and the phase variations over periods of time up to an hour or so were of interest, and typical values for the NBA-Frankfurt path were given there.

The day-to-day standard deviations of phase observed at Maui are given at five minute intervals for each month in tables 1-12, and are also plotted in figures 1 and 2. During daylight hours the day-to-day standard deviations range from about 6° during the winter (January and December) to about 12° during the summer (June, July, and August). During hours when the path is completely dark, the average standard deviations range in no consistent manner between 35° (April) and 60° (November).

The short term phase variation can be described by means of the rms difference of observations separated by a time T [Brady et al., 1963].

Table 13 contains the rms phase differences for time intervals of 10 to 90 minutes for day and night conditions during the months of February, April, June, August, October, and December of 1962 for the

NBA-Maui path. Several interesting features are shown in the table. It is clear that the rms phase differences increase as the time interval T increases, when T is small, but that on the whole the phase difference appears to be reaching a constant value when T is 90 minutes. The table shows that the nighttime phase deviations are appreciably greater than those observed during the day, especially during August, October, and December when the ratio of the nighttime to daytime deviation is between 4 and 5. In February and June the ratio is about 1.5, while in April the deviations are nearly equal.

For this path a change of phase of 1° corresponds approximately to a change in effective height of 0.05 km. Thus the observed rms phase deviations which range from 3° to 72° correspond to rms variations in the effective height of the ionosphere over the whole path of between 0.15 and 3.6 km, if it is assumed that the fluctuations are entirely due to the ionosphere.

5. Acknowledgments

The observations at Maui have been obtained by Mr. Sadami Katahara of the NBS Field Station. The work reported here was supported by the Advanced Research Projects Agency, Washington, D. C., under Order No. 183.

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NBA (18 kc/s, BALBOA, PANAMA) TO MAUI, HAWAII
AVERAGE PHASE FOR JANUARY-MARCH AND OCTOBER-DECEMBER 1962

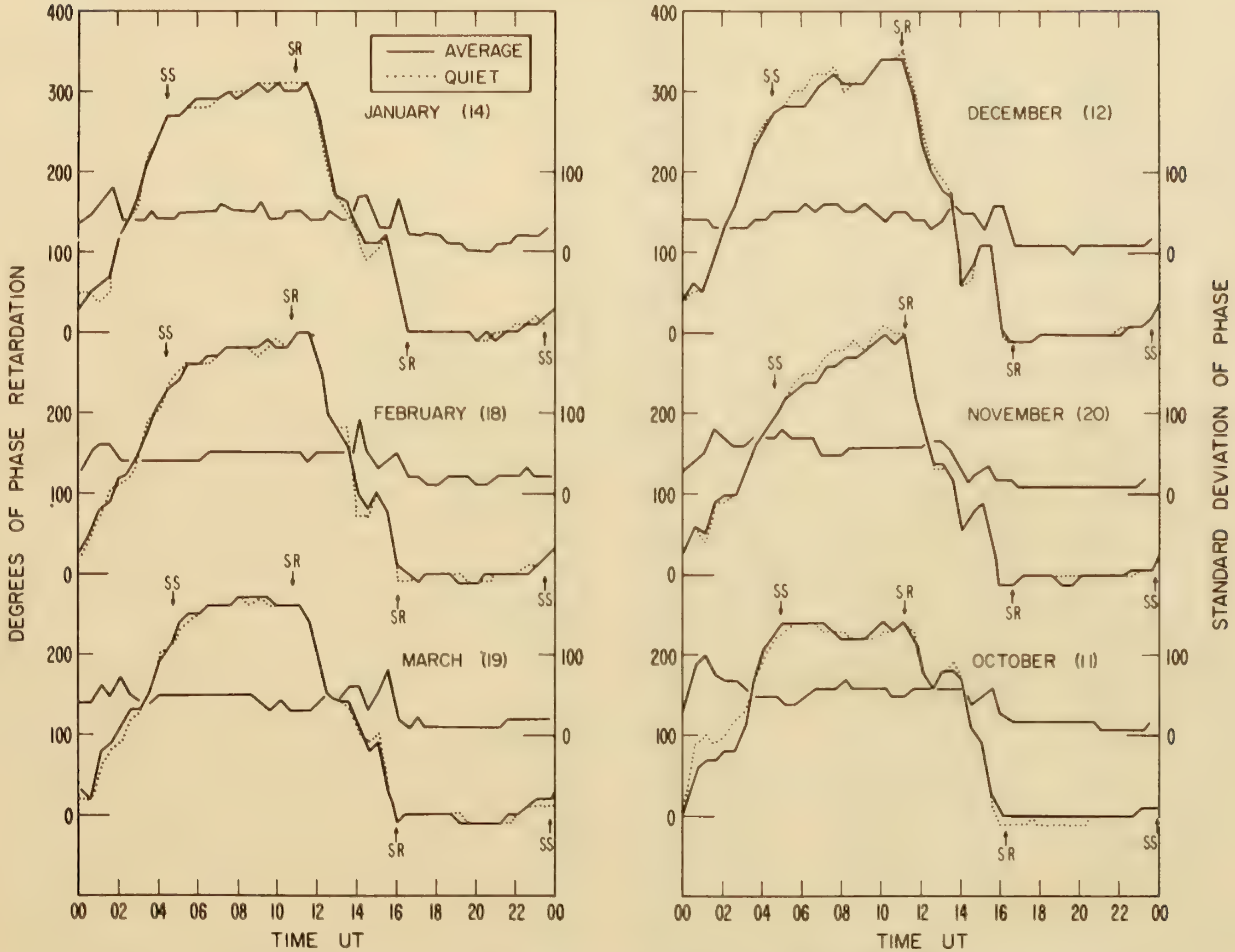

Figure 1. Mean phase and standard deviation in degrees for January-March and October-December 1962. Sunrise and sunset at each end of the path are denoted by SR and SS on the mean phase curve.

NBA (18 kc/s, BALBOA, PANAMA) TO MAUI, HAWAII
AVERAGE PHASE FOR APRIL–JUNE AND JULY–SEPTEMBER 1962

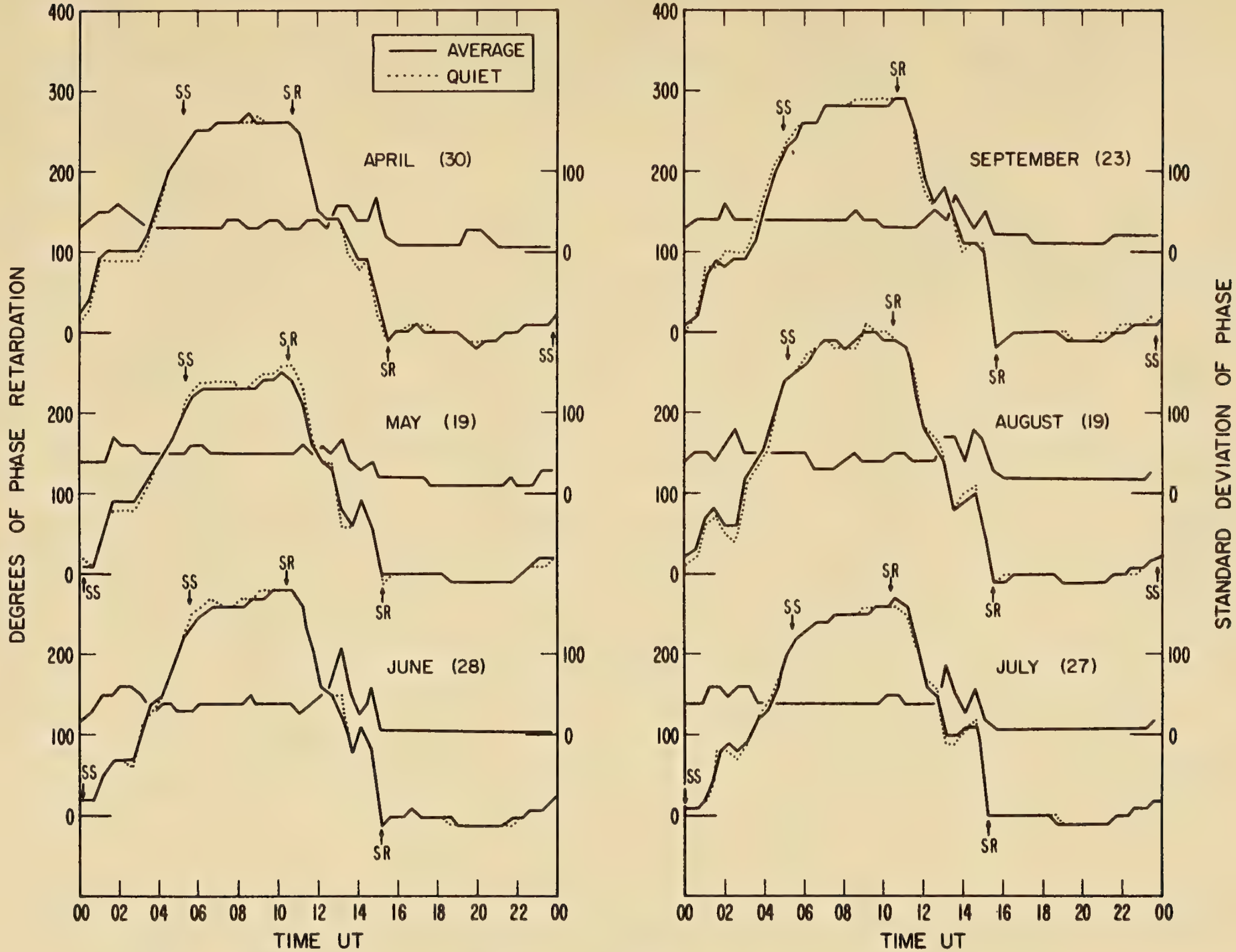

Figure 2. Mean phase and standard deviation in degrees for April-June and July-September 1962. Sunrise and sunset at each end of the path are denoted by SR and SS on the mean phase curve.

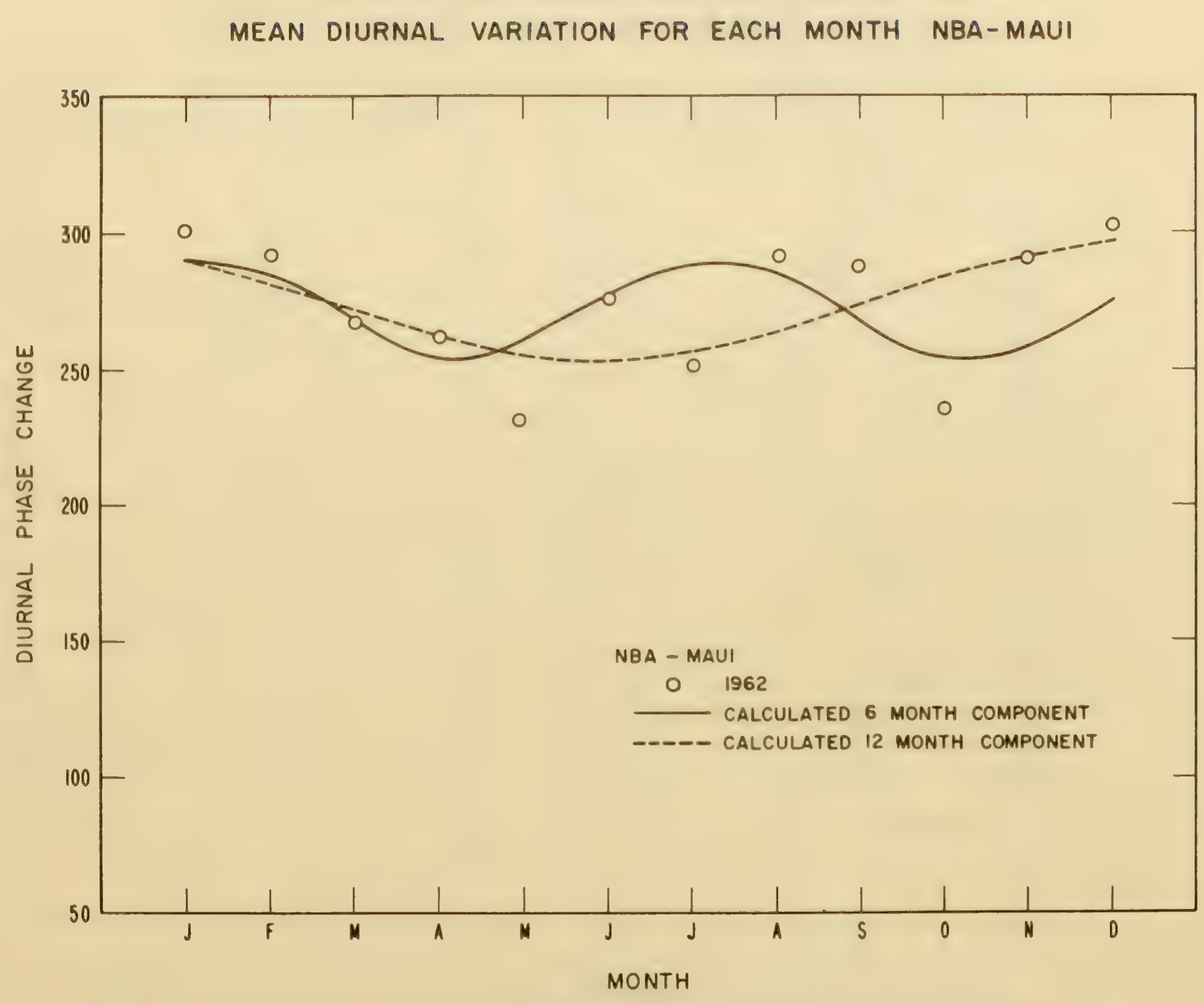

Figure 3. Mean diurnal variation for each month. NBA-Maui.

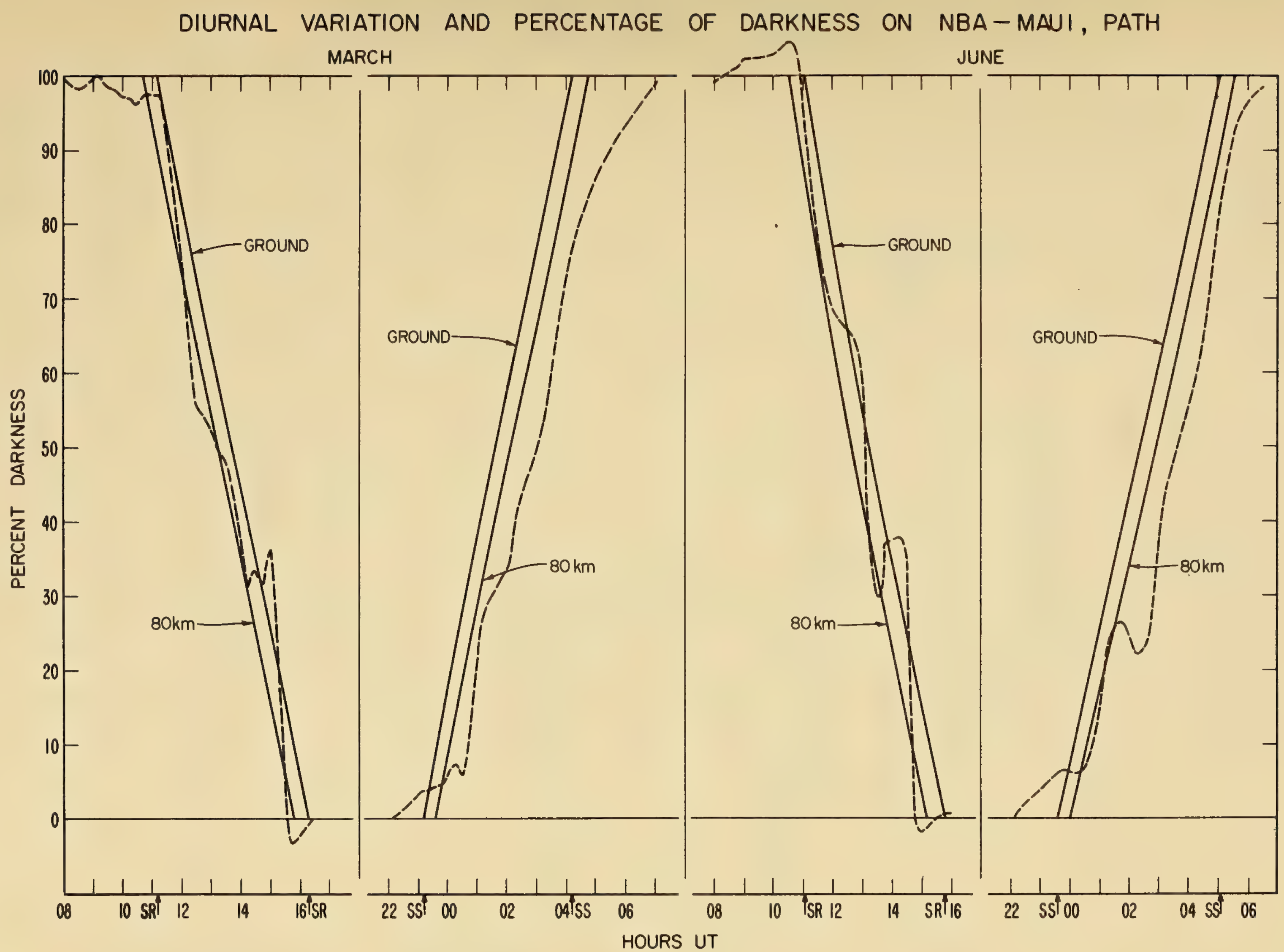

Figure 4. Mean diurnal phase variation (dashed lines) and percentage of darkness (solid lines) on NBA-Maui path for March and June 1962.

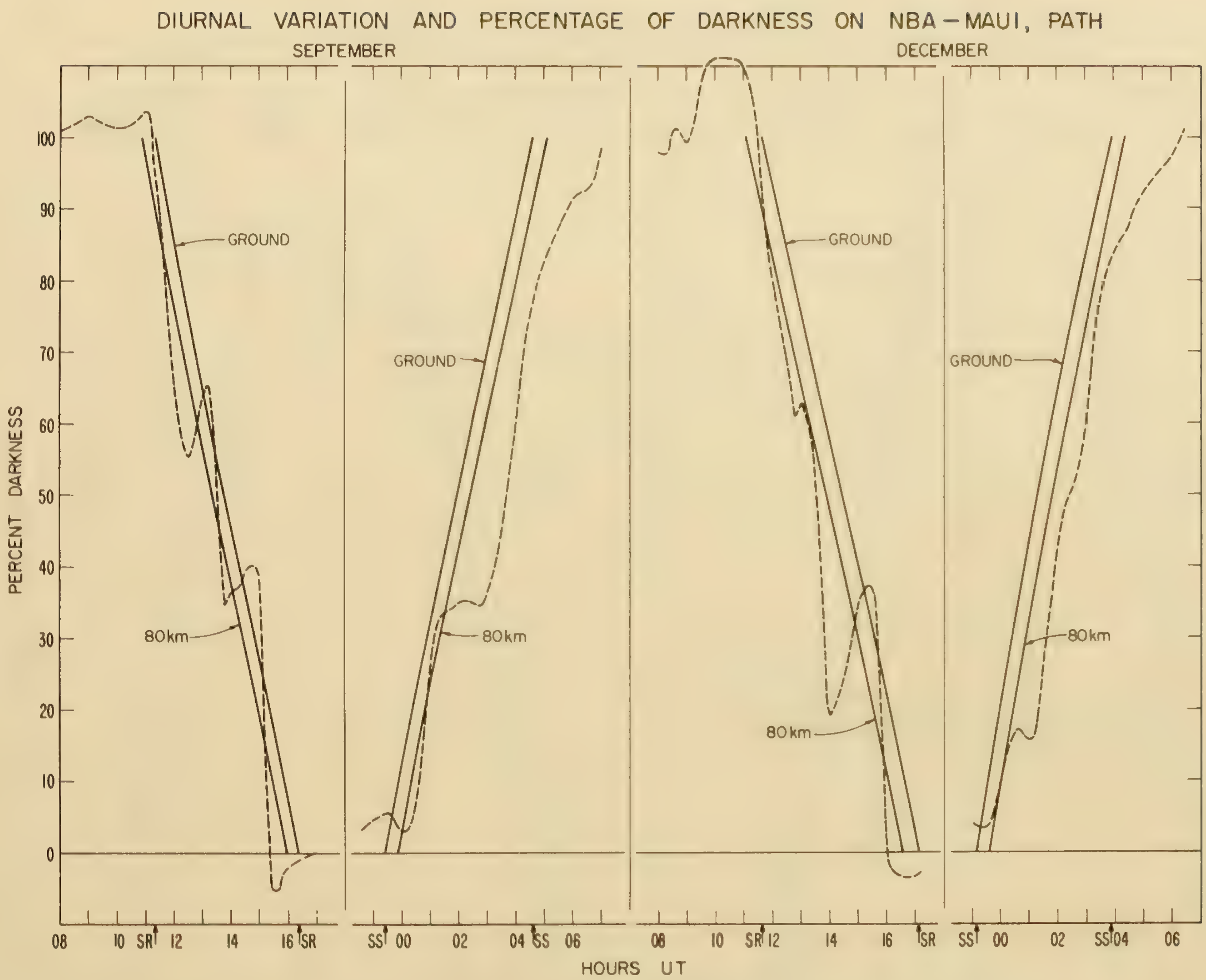

Figure 5. Mean diurnal phase variation (dashed lines) and percentage of darkness (solid lines) on NBA-Maui path for September and December 1962.

MONTHLY AVERAGE ON PATH 2 4 FOR MONTH 1 1962

UT	AVER	SDV NO	QAV NO		+ 5 MIN			+10 MIN			+15 MIN			+20 MIN			+25 MIN
00	528.	37.12	525. 8	532.	38.12	529. 8	535.	40.12	523. 8	541.	42.11	529. 7	543.	45.11	537. 8	541.	46.11	534. 6
	546.	52.12	555. 7	544.	56.12	546. 8	541.	60.12	544. 8	548.	56.11	549. 7	557.	66.12	548. 9	556.	68.12	546. 9
01	555.	71.12	544. 9	558.	73.12	546. 9	561.	76.12	547. 9	564.	77.12	551. 9	567.	78.12	543. 8	567.	77.12	546. 8
	568.	77.12	549. 8	576.	74.12	572. 9	584.	74.12	584. 9	590.	73.12	584. 8	595.	72.12	607.10	617.	39.11	611. 6
02	621.	36.11	623. 7	624.	35.11	632. 6	627.	34.11	635. 6	628.	34.11	636. 6	633.	36.12	640. 7	635.	36.12	641. 7
	638.	36.13	641. 9	642.	38.13	649.10	646.	40.13	656. 8	650.	40.13	662. 9	652.	40.14	658. 9	658.	41.14	659. 8
03	665.	43.14	664.10	675.	43.14	673.10	684.	45.14	683.10	690.	45.14	689.10	697.	46.14	700. 9	705.	46.14	708. 9
	713.	47.14	716. 9	718.	45.14	714. 8	723.	44.14	718. 8	728.	44.14	724. 8	734.	43.14	730. 8	739.	42.14	735. 8
04	744.	40.14	740. 8	748.	41.14	744. 8	753.	42.14	748. 8	757.	42.14	753. 8	761.	41.14	763. 9	768.	38.13	769. 8
	770.	39.13	770. 8	772.	39.13	776. 9	773.	40.13	772.10	774.	40.13	773.10	776.	41.13	774.10	777.	42.13	775.10
05	772.	46.14	769.12	773.	47.14	770.12	775.	48.14	767.11	777.	48.14	773.12	779.	48.14	775.12	781.	48.14	781.11
	783.	47.14	783.11	784.	47.14	784.11	785.	47.14	785.11	785.	46.14	783.11	784.	46.14	778.12	786.	46.14	784.11
06	788.	48.14	781.10	789.	49.14	783.10	791.	50.14	784.10	792.	50.14	785.10	793.	51.14	790. 9	792.	51.14	789. 9
	791.	52.14	783.10	792.	52.14	784.10	793.	53.14	785.10	794.	53.14	788.10	796.	54.14	790.10	795.	54.14	789.10
07	795.	56.14	794. 9	796.	56.14	790.10	796.	56.14	792.10	796.	55.14	792.10	795.	53.14	798. 9	795.	52.14	798. 9
	795.	51.14	799. 9	795.	50.14	799. 9	795.	48.14	799. 9	795.	48.14	800. 9	795.	48.14	802. 9	795.	49.14	801. 9
08	794.	50.14	801. 9	792.	52.14	800. 9	789.	55.14	800. 9	788.	54.14	803.10	787.	54.14	801.10	793.	48.14	800.10
	797.	47.14	800.11	800.	50.14	796.10	802.	58.14	793.10	803.	57.14	800. 9	804.	57.14	803. 9	805.	56.14	804.11
09	806.	55.14	806.11	807.	54.14	803.10	809.	53.14	806.10	806.	47.14	806.10	803.	43.14	807.10	804.	43.14	812.11
	805.	44.14	810.10	804.	43.14	808.10	804.	42.14	807.10	805.	42.14	807.10	807.	42.14	808.10	807.	43.14	808.10
10	808.	44.14	808.10	802.	41.13	809.10	802.	43.13	810.10	802.	44.13	807. 9	803.	45.13	807. 9	802.	46.13	807. 9
	801.	46.13	810.10	802.	45.13	810.10	802.	44.13	806. 7	803.	44.13	800. 8	803.	45.13	805. 9	802.	45.13	805. 9
11	801.	46.13	805. 9	807.	43.12	810.10	806.	45.12	80[illegible].10	808.	42.12	811.10	814.	40.13	816.11	810.	39.13	812.11
	806.	39.13	808. 9	799.	39.13	802. 9	792.	39.13	79[illegible]. 9	785.	40.13	793. 8	777.	40.13	780. 9	772.	42.13	776. 9
12	766.	43.13	771. 9	754.	40.13	759. 9	747.	45.14	75[illegible]. 9	740.	46.14	740.10	733.	48.14	732.10	725.	50.14	718. 9
	717.	52.14	711. 9	710.	50.14	704. 9	702.	47.14	696. 9	695.	44.14	694. 8	687.	42.14	690. 9	677.	37.13	676. 7
13	673.	38.13	667. 8	667.	37.12	665. 8	664.	37.12	652. 8	663.	37.12	650. 8	665.	38.13	647. 8	665.	40.12	651. 8
	664.	42.12	649. 8	664.	46.12	651. 7	664.	50.12	649. 7	656.	55.11	632. 7	653.	59.11	629. 7	637.	59.10	627. 6
14	628.	65.10	631. 7	624.	65.10	624. 7	613.	66.11	609. 8	610.	69.11	592.10	608.	73.11	588.10	608.	72.11	588.10
	608.	71.11	588.10	607.	66.11	588.10	607.	62.11	589.10	605.	50.11	591.10	604.	38.12	589.10	603.	34.12	592. 9
15	606.	30.13	600. 9	608.	29.13	605. 9	611.	29.13	611. 9	611.	29.12	611. 8	614.	28.12	614. 8	615.	28.12	616. 8
	616.	29.12	618. 8	617.	28.12	620. 8	602.	61.13	618.12	598.	59.12	615.11	596.	57.12	612.11	586.	56.12	596.10
16	564.	72.13	582.10	532.	56.11	535. 7	506.	56.12	498. 8	495.	39.11	498. 8	492.	31.12	491. 8	493.	28.12	493. 8
	495.	24.13	496. 9	495.	22.13	496. 9	496.	19.13	495. 8	496.	19.13	495. 8	497.	18.13	496. 8	497.	18.13	496. 8
17	497.	17.13	497. 9	498.	18.13	497. 9	496.	20.14	495.10	497.	20.14	495.10	498.	20.14	494.11	498.	19.14	495.11
	499.	18.14	495.11	499.	17.14	497.10	500.	16.14	498.10	500.	16.14	499.10	501.	15.14	501. 9	501.	15.14	502. 9
18	502.	15.14	502.10	503.	14.14	502.10	503.	13.14	502.10	503.	12.14	502.10	503.	12.14	502.10	503.	11.14	502.10
	503.	10.14	502.10	502.	10.14	502.10	502.	9.14	502.11	501.	9.14	502.11	500.	9.14	501.11	500.	9.14	500.11
19	499.	9.14	500.11	499.	8.14	499.12	499.	7.14	498.11	498.	7.14	497.11	498.	6.14	497.11	497.	5.14	497.11
	496.	4.14	495.10	496.	4.14	495. 9	496.	4.14	495. 9	495.	4.14	495. 9	495.	4.14	494. 9	494.	3.14	494. 8
20	494.	3.14	493. 8	494.	3.14	494. 9	495.	4.14	494.10	495.	4.14	494.11	496.	4.14	495. 9	496.	4.14	495. 9
	495.	4.14	495. 9	495.	4.14	495.11	496.	4.14	496.10	496.	4.14	496.10	496.	4.14	496.10	496.	5.14	497.11
21	495.	7.15	496.11	495.	7.15	496.11	494.	8.15	495.11	495.	9.15	497.10	495.	11.15	498.10	496.	11.15	498.10
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22	503.	18.15	507. 9	503.	18.14	505. 9	504.	18.14	504. 8	506.	18.14	507. 8	508.	18.14	511. 9	509.	18.14	512. 9
	510.	19.14	514. 9	510.	19.14	513. 8	510.	19.14	513. 8	511.	19.14	514. 8	512.	19.14	515. 8	513.	20.14	516. 8
23	514.	21.14	517. 8	515.	22.14	515.10	515.	23.14	515.10	514.	23.13	513. 9	515.	23.13	514. 9	518.	25.13	513.10
	520.	28.13	515.10	522.	29.13	517.10	524.	31.13	521. 9	526.	33.13	518. 8	528.	36.13	519. 8	530.	40.13	519. 8

Table 1

MONTHLY AVERAGE ON PATH 2 4 FOR MONTH 2 1962

UT	AVER	SDV NO	QAV NO		+ 5 MIN			+10 MIN			+15 MIN			+20 MIN			+25 MIN	
00	528.	29.18	522.13	532.	31.18	520.15	535.	35.18	525.16	540.	37.18	532.15	545.	41.18	537.15	549.	45.17	545.15
	552.	48.17	551.14	566.	47.14	571.10	569.	49.14	570.11	571.	52.14	572.11	574.	55.14	574.11	577.	60.13	579.10
01	580.	63.13	574. 9	582.	63.13	577. 9	586.	61.14	592. 9	588.	60.14	599.10	591.	57.15	601.11	591.	57.15	595.12
	590.	57.15	595.12	600.	46.14	600.11	600.	44.15	598.12	603.	41.15	603.11	614.	45.17	607.13	615.	43.17	608.13
02	616.	41.17	607.14	618.	41.17	612.13	623.	41.18	615.13	625.	40.18	617.13	627.	40.18	616.12	629.	40.18	618.12
	631.	40.18	620.12	633.	39.18	623.12	637.	39.18	630.13	640.	39.18	630.12	644.	39.18	634.12	648.	39.18	642.13
03	653.	39.18	647.13	657.	38.18	651.13	662.	38.18	656.13	667.	38.18	662.13	673.	38.18	668.13	678.	38.18	676.12
	682.	38.18	685.11	686.	38.18	686.12	691.	38.18	691.12	694.	38.18	695.12	698.	38.18	691.10	702.	37.18	695.10
04	706.	36.18	699.10	711.	35.18	708. 9	716.	35.18	715. 9	719.	35.18	718.11	723.	35.18	722.11	726.	36.18	724.11
	729.	36.18	727.11	731.	36.18	730.11	734.	35.18	736.10	737.	36.18	742.11	740.	36.18	744.13	742.	36.18	744.12
05	744.	36.18	747.12	747.	37.18	750.12	750.	38.18	754.12	752.	39.18	756.12	753.	40.18	757.12	758.	37.17	757.12
	758.	37.17	760.11	759.	37.17	758.12	758.	38.18	759.12	759.	40.18	761.12	761.	42.18	764.12	763.	42.18	760.11
06	765.	43.18	761.13	766.	44.18	764.12	767.	46.18	764.12	766.	48.18	762.12	766.	51.18	756.13	766.	50.17	755.12
	769.	49.17	758.12	770.	48.17	760.12	772.	47.17	762.12	773.	47.17	763.12	774.	48.17	768.11	775.	48.17	768.11
07	775.	49.17	769.11	775.	50.17	768.11	774.	52.17	768.11	774.	53.17	768.11	774.	55.17	768.11	775.	54.17	770.11
	776.	53.17	777.12	779.	52.16	782.11	780.	50.16	783.11	779.	49.16	786.12	777.	49.16	780.11	778.	48.16	777.12
08	779.	47.16	779.12	780.	47.16	775.11	780.	47.16	770.10	780.	46.16	775.11	782.	44.17	778.12	781.	46.17	777.12
	780.	47.17	775.12	779.	49.17	776.12	779.	50.17	773.13	779.	50.17	774.13	778.	51.17	778.14	778.	51.17	774.13
09	777.	53.17	774.13	781.	53.16	783.13	783.	54.16	785.11	784.	53.16	786.13	786.	52.16	788.13	787.	51.16	789.13
	788.	50.16	781.11	789.	49.16	782.11	789.	46.17	782.12	789.	46.17	786.11	788.	46.18	784.12	786.	47.18	787.13
10	785.	48.18	785.13	785.	50.18	785.13	785.	52.18	789.12	784.	54.18	790.12	783.	57.16	790.12	784.	56.18	785.11
	784.	54.18	785.11	785.	53.18	790.12	786.	51.18	790.12	789.	49.18	783.12	793.	47.18	790.11	794.	47.18	792.11
11	796.	46.18	793.11	797.	47.18	794.11	798.	48.18	791.12	801.	45.18	795.12	805.	44.18	801.12	802.	43.18	801.11
	798.	42.18	802.12	791.	40.18	789.12	784.	39.18	782.12	778.	39.18	775.12	772.	40.18	768.12	764.	43.18	768.14
12	755.	45.18	760.14	749.	47.18	754.14	742.	48.18	748.14	732.	48.18	738.14	721.	47.18	723.15	712.	47.18	709.14
	703.	48.18	699.14	697.	49.18	692.14	691.	50.18	685.14	688.	50.18	682.14	684.	51.18	682.15	683.	51.18	678.14
13	681.	51.18	676.14	687.	42.17	694. 9	685.	44.17	698.10	683.	43.17	692.11	681.	43.17	689.10	673.	44.17	679.10
	665.	51.17	675. 9	654.	60.16	650.10	646.	70.16	643.10	633.	74.16	634.11	620.	85.16	618.11	612.	87.16	591.11
14	604.	90.16	574.12	592.	67.16	582.10	581.	62.16	570.12	584.	62.16	566.13	586.	61.17	566.15	584.	52.17	575.13
	582.	48.17	571.14	585.	48.17	575.14	589.	47.17	578.14	589.	34.17	583.11	589.	28.17	588.12	592.	29.17	591.12
15	595.	31.17	597.11	591.	29.15	593. 9	592.	31.15	590.10	591.	33.15	593. 9	590.	36.15	593. 9	584.	39.14	582. 9
	580.	42.14	574.10	568.	47.14	560.11	545.	68.15	543.10	533.	61.15	534.11	518.	58.16	500.10	516.	56.16	499.12
16	511.	53.17	494.13	498.	33.16	488.12	494.	28.16	494.13	494.	26.16	495.13	495.	24.16	493.12	495.	22.16	494.12
	496.	20.17	495.13	496.	19.17	494.13	494.	18.17	493.13	494.	17.17	494.13	494.	14.17	492.12	493.	15.17	493.12
17	493.	17.17	494.12	494.	15.17	497.14	495.	14.17	496.10	496.	13.17	497.10	497.	13.17	497.10	498.	12.17	499.11
	498.	14.17	501.13	498.	14.17	500.12	499.	13.17	500.12	500.	13.17	501.12	501.	13.17	502.12	501.	13.17	501.13
18	501.	13.17	501.13	501.	13.17	501.13	501.	13.17	501.13	500.	15.17	499.11	498.	18.17	498.12	498.	19.17	497.12
	497.	19.17	497.12	497.	19.17	497.12	496.	21.17	497.12	495.	22.17	498.13	495.	21.17	495.14	495.	20.17	495.12
19	494.	20.17	496.13	494.	19.17	494.12	494.	19.17	493.12	494.	19.17	493.12	493.	18.17	492.12	492.	18.17	492.11
	492.	17.17	490.12	493.	17.16	491.11	493.	15.16	492.10	493.	14.16	492.10	494.	13.16	493.10	494.	12.16	492.10
20	495.	12.17	493.12	495.	12.17	494.13	495.	12.17	495.12	496.	13.17	496.12	496.	13.17	494.12	496.	13.17	494.12
	496.	13.17	495.12	497.	13.17	496.13	497.	14.17	496.14	497.	14.17	496.14	497.	14.17	496.14	496.	15.17	496.13
21	497.	16.17	495.12	497.	16.17	496.12	498.	16.17	496.12	499.	16.17	496.13	500.	17.17	497.13	501.	17.17	499.14
	503.	17.18	501.15	503.	16.18	502.15	504.	16.19	503.16	503.	15.19	502.13	503.	14.19	500.14	502.	15.19	501.13
22	502.	17.19	503.14	503.	19.19	504.14	503.	21.19	505.14	503.	22.19	506.15	501.	24.19	505.15	502.	25.19	506.15
	503.	26.19	507.17	505.	26.19	508.17	506.	27.19	509.16	508.	26.19	510.16	509.	26.19	511.16	510.	26.19	511.16
23	511.	24.19	512.16	512.	24.19	515.15	513.	23.19	515.15	513.	22.19	516.15	514.	20.19	516.15	516.	20.19	517.14
	518.	23.19	518.15	516.	18.18	516.13	517.	17.18	517.13	518.	17.18	519.14	520.	18.18	520.12	521.	19.18	522.11

Table 2

MONTHLY AVERAGE ON PATH 2 4 FOR MONTH 3 1962

UT	AVER	SDV NO	QAV NO		+ 5 MIN			+10 MIN			+15 MIN			+20 MIN			+25 MIN	
00	527.	39.18	518.15	527.	39.18	520.14	526.	40.18	520.14	526.	40.18	520.14	525.	40.18	519.14	525.	42.18	520.14
	525.	44.18	517.13	536.	44.16	521.12	539.	49.16	521.12	548.	52.14	534. 9	551.	55.14	530. 8	563.	53.14	542. 8
01	575.	61.14	561. 9	581.	60.13	576. 9	582.	57.14	577.10	583.	56.14	578.10	587.	54.15	583.11	586.	52.15	582.11
	585.	51.15	580.11	586.	51.15	580.11	598.	69.16	587.12	600.	70.16	586.12	599.	70.17	580.14	605.	68.17	582.15
02	611.	68.17	591.14	615.	64.17	597.14	626.	65.18	603.14	628.	62.18	607.14	630.	58.18	611.14	631.	55.18	614.14
	632.	52.18	619.13	631.	49.18	621.13	631.	46.18	623.13	631.	43.18	625.13	631.	42.18	632.15	632.	42.18	633.15
03	634.	42.18	634.15	636.	42.18	637.15	639.	42.18	640.15	642.	42.18	643.15	645.	43.18	647.15	650.	43.18	655.14
	655.	44.18	661.14	662.	46.18	669.14	668.	46.19	675.15	673.	46.19	681.15	679.	46.19	687.15	684.	46.19	692.15
04	689.	46.19	697.15	694.	46.19	698.14	699.	46.19	703.14	703.	47.19	707.14	707.	48.19	711.14	710.	48.19	714.14
	714.	48.19	714.13	718.	48.19	718.13	723.	48.19	722.13	726.	49.19	724.13	730.	49.19	727.13	732.	49.19	729.13
05	735.	49.19	731.13	738.	49.19	732.13	740.	48.19	735.13	742.	48.19	734.14	744.	47.19	734.12	745.	47.19	739.13
	746.	47.19	738.14	748.	47.19	739.14	749.	47.19	745.15	750.	47.19	746.15	752.	47.19	747.15	752.	46.19	748.15
06	753.	46.19	749.15	754.	46.19	750.15	755.	46.19	751.15	756.	46.19	752.15	757.	46.19	757.14	758.	45.19	758.14
	759.	45.19	759.14	759.	45.19	755.13	760.	45.19	755.13	761.	45.19	756.13	762.	45.19	757.13	762.	46.19	756.13
07	761.	46.19	764.11	762.	48.19	761.12	761.	49.19	762.12	760.	49.19	760.12	758.	50.19	758.12	758.	50.19	759.12
	759.	51.19	756.13	760.	52.19	758.13	761.	54.19	760.11	767.	48.18	765.12	767.	47.18	765.12	768.	48.18	766.12
08	768.	48.18	767.12	769.	49.18	768.12	769.	49.18	769.12	770.	50.18	770.12	771.	51.18	765.11	771.	50.18	765.11
	772.	49.18	763.12	773.	47.18	762.12	774.	46.18	765.11	774.	44.18	768.10	775.	42.18	765.11	774.	41.18	764.11
09	774.	40.18	768.12	776.	39.17	770.13	776.	38.17	770.13	776.	37.17	767.14	774.	36.18	766.15	774.	35.18	765.15
	773.	34.18	764.15	772.	34.18	764.15	771.	34.19	764.16	769.	35.19	762.16	767.	36.19	757.15	765.	35.19	760.15
10	763.	35.19	759.15	761.	35.19	758.15	760.	36.19	757.15	760.	35.19	759.14	759.	35.19	759.14	759.	34.19	760.14
	759.	33.19	756.16	760.	33.19	758.15	760.	32.19	759.15	759.	31.19	761.14	759.	30.19	762.15	759.	29.19	762.15
11	758.	29.19	760.14	761.	27.19	761.14	763.	27.19	765.13	760.	25.19	762.14	758.	26.19	760.14	751.	27.19	753.14
	743.	29.19	742.13	736.	30.19	737.14	729.	31.19	729.14	724.	32.18	724.13	717.	34.18	717.13	709.	35.18	709.13
12	702.	37.18	701.13	693.	38.18	689.14	676.	48.19	676.15	669.	48.19	672.14	662.	48.19	661.15	656.	47.19	655.15
	650.	47.19	649.15	646.	46.19	645.15	642.	46.19	641.15	639.	46.19	645.15	636.	46.19	639.16	642.	39.18	641.15
13	641.	38.18	640.13	640.	39.16	638.12	638.	40.17	636.13	637.	43.17	631.10	636.	47.17	626.11	636.	52.17	629.10
	636.	58.17	629.10	635.	60.17	633.11	633.	63.17	630.11	620.	56.15	615. 9	616.	59.15	602.10	612.	58.15	603. 9
14	608.	56.15	600. 9	597.	44.15	607.10	585.	41.15	585.12	583.	36.15	584.12	581.	32.15	587.11	582.	32.15	588.11
	583.	33.15	589.11	585.	34.15	582.12	590.	36.17	583.13	590.	39.17	584.13	591.	42.17	589.12	590.	46.17	591.12
15	590.	51.17	597.13	577.	54.17	590.12	564.	82.17	586.12	557.	84.16	567.12	553.	85.16	560.12	542.	82.16	539.13
	532.	82.16	517.12	510.	54.16	505.12	485.	35.17	488.15	485.	28.17	488.15	484.	22.17	487.15	487.	19.17	489.15
16	490.	17.17	493.14	492.	15.17	496.13	494.	14.17	499.12	495.	14.17	499.11	496.	14.17	501.11	497.	14.17	501.11
	498.	14.17	501.11	497.	13.17	500.10	492.	24.17	496.15	492.	25.17	496.15	493.	25.17	497.15	494.	23.17	497.15
17	495.	22.17	499.14	495.	18.16	499.13	496.	15.16	499.12	497.	14.16	499.12	498.	13.16	500.13	498.	12.16	501. 9
	498.	12.16	500. 9	499.	11.16	501. 9	499.	11.16	501. 9	499.	11.16	501. 9	499.	11.16	503.11	498.	10.16	501.10
18	497.	10.16	499.11	498.	10.16	498.10	498.	11.16	499.11	498.	11.16	499.11	497.	12.16	499.11	497.	12.16	498.11
	497.	12.16	497.10	496.	12.16	497.10	495.	12.16	497. 9	495.	12.16	495.10	494.	12.16	495.11	494.	13.16	496.10
19	493.	13.16	496.12	493.	13.16	495.12	492.	13.16	495.12	492.	13.16	493.13	492.	13.16	493.13	492.	13.16	493.13
	491.	13.17	491.13	491.	13.17	491.13	491.	12.17	491.13	492.	12.17	491.13	491.	12.17	491.13	492.	12.17	491.13
20	492.	13.17	491.13	492.	13.17	491.13	492.	13.17	491.13	492.	13.17	491.13	492.	13.17	491.13	492.	13.17	491.13
	492.	13.17	492.12	492.	13.17	492.12	492.	14.17	490.13	492.	14.17	490.13	492.	14.17	491.12	492.	14.17	492.12
21	493.	14.18	492.13	493.	15.18	491.12	494.	15.18	491.12	494.	15.18	493.11	495.	16.18	492.13	496.	16.18	493.12
	497.	16.18	494.12	497.	16.18	495.12	498.	17.18	496.12	499.	18.18	496.12	500.	18.18	497.12	501.	18.18	498.12
22	502.	19.18	497.13	504.	18.18	500.12	506.	18.18	503.12	507.	19.18	503.12	508.	19.18	505.12	509.	19.18	506.12
	510.	19.18	505.13	511.	19.18	506.13	512.	20.18	509.12	513.	20.18	508.13	514.	20.18	509.13	514.	20.18	509.13
23	515.	20.18	510.13	516.	20.18	510.13	516.	21.18	512.12	516.	21.18	512.12	517.	22.18	511.13	517.	22.18	511.13
	517.	22.18	512.13	517.	22.18	512.13	517.	22.18	512.13	517.	22.18	513.12	517.	22.18	511.11	517.	22.18	511.11

Table 3

MONTHLY AVERAGE ON PATH 2 4 FOR MONTH 4 1962

UT	AVER	SDV NO	QAV NO		+ 5 MIN			+10 MIN			+15 MIN			+20 MIN			+25 MIN	
00	517.	27.30	514.25	517.	27.30	513.26	518.	27.30	514.26	519.	28.30	514.25	521.	30.30	514.24	528.	34.29	519.23
	536.	38.29	527.23	548.	43.29	536.19	558.	47.29	551.17	568.	49.29	556.19	578.	50.30	571.19	584.	48.30	576.22
01	589.	46.30	588.21	592.	44.30	590.22	595.	43.30	596.23	596.	43.30	593.21	597.	44.30	593.21	600.	44.29	594.21
	602.	46.29	594.21	602.	48.29	592.20	602.	50.29	596.21	601.	53.29	594.21	604.	63.29	597.22	599.	58.29	593.21
02	599.	61.29	589.22	597.	61.29	587.22	596.	61.29	584.21	596.	59.29	590.23	596.	57.29	589.23	597.	52.29	592.22
	597.	50.29	593.22	598.	47.29	591.23	598.	44.29	592.23	600.	39.29	594.22	601.	37.29	592.21	604.	35.29	594.21
03	605.	35.30	592.24	607.	34.30	597.22	610.	34.30	602.23	613.	33.29	606.22	616.	33.29	609.22	620.	33.29	611.23
	624.	32.29	616.23	629.	32.29	622.20	634.	32.30	627.21	640.	32.30	634.20	645.	32.30	640.20	652.	31.30	646.21
04	660.	32.30	654.21	667.	32.30	661.22	674.	33.30	668.22	680.	32.30	673.18	686.	32.30	681.19	692.	31.30	687.19
	698.	32.30	695.20	703.	31.30	699.21	709.	31.30	705.21	713.	31.30	710.20	717.	30.30	711.20	720.	30.30	717.21
05	723.	30.30	722.20	726.	30.30	725.20	729.	30.30	729.20	731.	30.30	732.19	734.	30.30	739.17	735.	29.30	736.18
	738.	28.30	738.18	739.	27.30	739.18	740.	26.30	740.18	742.	26.30	740.19	744.	26.30	743.18	745.	26.30	743.19
06	746.	26.30	746.20	747.	26.30	748.20	749.	27.30	748.22	749.	27.30	748.22	750.	27.30	749.22	750.	27.30	750.22
	750.	27.30	751.23	751.	29.29	755.20	751.	31.29	754.21	751.	32.29	751.21	752.	33.29	755.22	753.	33.29	755.21
07	756.	34.30	757.22	756.	35.30	755.21	757.	36.30	754.22	757.	36.30	755.22	758.	37.30	756.22	758.	37.30	756.22
	758.	39.30	758.23	759.	38.30	760.22	759.	39.30	760.22	761.	39.30	763.20	762.	39.30	763.19	762.	39.30	764.19
08	762.	40.30	765.19	762.	38.30	764.19	763.	36.30	764.19	763.	36.30	766.20	764.	35.30	764.19	765.	35.30	763.20
	765.	34.30	765.20	765.	32.30	764.20	765.	31.30	766.20	764.	31.30	765.21	764.	31.30	766.22	764.	31.30	765.22
09	763.	31.30	765.22	761.	32.30	764.22	759.	37.30	766.23	759.	35.30	765.21	759.	36.30	763.23	760.	37.30	763.23
	760.	38.30	763.25	759.	39.30	764.26	758.	40.30	763.26	758.	40.30	762.25	758.	40.30	761.25	758.	39.30	761.25
10	757.	37.30	759.24	758.	32.30	760.21	759.	29.30	760.19	760.	28.30	762.18	761.	26.30	762.19	761.	26.30	761.19
	760.	26.30	761.18	759.	27.30	761.20	757.	28.30	762.21	755.	28.30	758.22	753.	30.30	754.23	750.	31.30	752.21
11	746.	32.30	748.23	740.	33.30	742.23	734.	35.30	733.22	727.	35.30	727.23	720.	37.30	721.22	713.	38.30	714.22
	705.	40.30	708.23	697.	40.30	700.23	689.	40.30	691.23	680.	39.30	682.23	671.	39.30	672.22	663.	38.30	663.22
12	655.	38.30	653.21	650.	37.30	651.20	646.	36.30	644.21	644.	35.30	641.21	643.	35.30	641.22	643.	33.30	640.23
	644.	33.30	641.21	644.	35.30	640.21	643.	38.30	642.21	641.	44.30	640.22	641.	50.30	636.22	641.	54.30	639.19
13	643.	60.29	636.17	639.	63.27	626.16	636.	67.27	629.14	632.	68.27	625.16	628.	68.27	620.16	622.	64.27	609.17
	614.	61.27	596.16	602.	50.26	593.17	595.	48.26	582.18	593.	45.26	584.21	592.	43.26	584.21	591.	42.26	584.23
14	589.	39.27	581.23	587.	28.27	586.19	589.	29.27	586.20	590.	28.27	590.19	592.	28.27	590.20	591.	31.27	591.19
	588.	44.27	590.20	585.	48.27	591.19	583.	54.27	588.18	579.	58.27	584.17	574.	67.27	573.18	559.	68.26	556.18
15	537.	71.25	524.18	511.	44.22	503.15	497.	36.24	496.19	497.	33.24	494.20	495.	30.25	493.21	494.	22.25	493.20
	494.	17.26	495.21	495.	15.26	498.21	497.	15.26	500.21	498.	15.26	501.21	499.	15.26	501.20	500.	14.26	502.20
16	500.	14.26	503.21	500.	14.26	503.21	501.	14.26	504.21	501.	14.26	504.21	502.	14.26	505.21	502.	14.26	505.21
	503.	14.26	505.21	503.	14.26	506.21	504.	13.26	506.20	505.	14.26	507.21	505.	13.26	507.21	505.	13.26	507.21
17	506.	13.26	507.21	506.	13.26	507.21	506.	12.26	507.21	506.	13.26	507.21	504.	14.27	505.21	504.	14.27	505.21
	503.	14.27	505.20	503.	14.27	505.21	503.	14.27	505.21	503.	14.27	505.21	502.	13.27	504.19	502.	13.27	503.21
18	503.	12.27	503.21	503.	12.27	503.21	502.	12.27	502.21	502.	12.27	502.21	501.	12.27	502.21	501.	12.27	500.20
	500.	11.27	500.19	500.	11.26	499.18	500.	11.26	498.18	499.	11.26	497.18	499.	10.26	498.19	498.	10.26	497.19
19	498.	10.27	497.19	497.	10.27	497.19	497.	9.27	496.19	494.	11.27	494.20	491.	21.27	493.24	490.	25.27	493.25
	490.	25.27	494.25	487.	30.27	494.24	486.	32.27	493.24	486.	31.27	493.24	487.	27.27	492.24	483.	31.27	492.23
20	483.	32.27	492.23	484.	29.27	492.23	484.	27.27	491.23	485.	25.27	491.23	486.	22.27	489.21	487.	20.27	489.21
	488.	17.27	489.21	489.	16.27	489.21	490.	13.28	489.20	490.	12.28	490.20	488.	23.28	491.26	492.	10.28	490.19
21	492.	9.29	492.19	493.	9.29	492.18	494.	9.30	494.20	495.	9.30	494.19	496.	9.30	495.19	497.	9.30	496.22
	498.	9.30	497.21	498.	9.30	499.20	499.	9.30	499.19	500.	9.30	500.20	501.	9.30	501.20	502.	9.30	502.20
22	503.	9.30	503.20	504.	9.30	503.20	504.	9.30	504.20	505.	9.30	504.21	506.	8.30	506.20	507.	8.29	508.20
	508.	8.29	509.21	508.	9.29	509.19	509.	9.29	511.19	509.	9.29	512.18	510.	9.29	511.17	510.	9.29	510.17
23	511.	10.30	511.18	511.	10.30	513.20	511.	11.30	513.20	512.	11.30	513.21	512.	12.30	514.20	512.	12.30	514.20
	512.	13.30	514.20	512.	13.30	514.20	513.	14.30	514.21	512.	13.30	514.21	512.	13.30	514.21	512.	13.30	513.20

Table 4

MONTHLY AVERAGE ON PATH 2 4 FOR MONTH 5 1962

UT	AVER	SDV NO	QAV NO	+ 5 MIN			+10 MIN			+15 MIN			+20 MIN			+25 MIN		
00	510.	43.18	518.13	511.	42.18	519.13	511.	42.18	520.13	511.	42.18	519.13	510.	42.18	516.12	511.	42.18	517.12
	511.	42.18	514.13	511.	42.18	521.13	510.	42.18	521.13	515.	40.15	527.12	516.	42.15	526.11	542.	25.13	544. 8
01	550.	38.14	542.11	557.	47.14	546.11	578.	72.15	559.12	581.	71.15	563.12	590.	72.16	567.12	591.	70.16	573.11
	591.	67.17	575.12	591.	65.17	576.12	591.	62.17	577.12	589.	60.17	581.13	586.	59.17	579.13	585.	59.17	577.13
02	587.	60.18	576.13	586.	59.18	579.12	585.	59.18	583.13	585.	58.18	583.13	587.	57.19	586.14	587.	57.19	587.14
	588.	57.19	579.14	589.	56.19	581.14	591.	56.19	584.14	593.	55.19	586.14	596.	55.19	589.14	603.	50.19	591.15
03	610.	48.19	601.15	615.	49.19	609.16	619.	49.19	614.16	623.	50.19	619.16	627.	50.19	626.15	630.	51.19	629.15
	634.	52.19	633.15	636.	52.19	635.15	638.	52.19	638.15	641.	52.19	641.15	644.	53.19	645.15	647.	53.19	648.15
04	651.	53.19	653.15	653.	53.19	655.15	656.	52.19	654.14	660.	52.19	658.14	665.	52.19	663.14	670.	53.19	664.13
	675.	54.19	669.13	680.	53.19	679.14	685.	54.19	689.13	690.	54.19	694.13	694.	54.19	699.13	699.	53.19	704.13
05	704.	53.19	709.13	708.	53.19	722.13	712.	54.19	726.13	715.	53.19	729.13	718.	53.19	732.13	719.	54.19	734.13
	721.	55.19	733.12	722.	55.19	734.12	723.	55.19	735.12	724.	55.19	736.12	726.	55.19	737.12	727.	55.19	738.12
06	728.	55.19	739.12	728.	54.19	739.12	727.	54.19	734.13	728.	53.19	735.13	729.	53.19	735.13	729.	52.19	736.13
	730.	52.19	740.14	729.	52.19	739.14	729.	52.19	736.13	729.	52.19	736.13	728.	52.19	735.13	729.	51.19	736.13
07	729.	50.19	736.13	730.	49.19	737.13	730.	48.19	737.13	730.	48.19	737.13	730.	47.19	737.13	730.	47.19	736.13
	730.	46.19	736.13	729.	47.19	735.13	728.	47.19	731.12	728.	47.19	735.11	727.	48.19	736.14	727.	48.19	735.14
08	727.	48.19	731.15	727.	48.19	735.14	727.	49.19	736.14	728.	49.19	737.14	728.	49.19	737.14	729.	49.19	738.14
	731.	49.19	740.14	731.	49.19	740.14	732.	49.19	744.13	733.	50.19	746.13	735.	51.19	747.13	736.	51.19	748.13
09	737.	50.19	748.13	737.	50.19	749.13	738.	50.19	749.13	738.	49.19	749.13	739.	49.19	749.13	739.	49.19	746.12
	739.	50.19	747.12	745.	47.18	753.11	746.	46.18	758.12	747.	47.18	759.12	747.	48.18	760.12	748.	48.18	762.12
10	749.	48.18	763.12	749.	49.18	764.12	749.	49.18	765.12	750.	49.18	765.12	749.	49.18	766.12	749.	49.18	771.11
	745.	52.19	758.10	742.	53.19	763. 9	738.	55.19	761. 9	732.	58.19	756. 9	724.	60.19	753.10	715.	58.19	743.10
11	706.	56.19	726.11	698.	54.19	714.13	690.	53.19	705.13	682.	53.19	694.12	673.	53.19	680.11	667.	53.19	676.12
	660.	54.19	668.12	656.	55.19	663.12	650.	56.19	659.10	647.	56.19	655.10	643.	56.19	650.12	640.	56.19	647.12
12	637.	56.19	640.11	636.	56.19	639.11	636.	55.19	644.12	637.	49.19	642.12	637.	46.19	643.14	633.	48.19	635.13
	629.	51.19	635.12	620.	57.17	620.11	613.	62.17	605.10	604.	66.16	585.10	597.	70.16	574.10	585.	68.15	562.11
13	580.	69.15	556.11	568.	62.14	554.11	566.	62.14	552.11	566.	57.14	553.11	567.	53.14	554.11	559.	41.12	556.10
	562.	35.13	561.11	566.	34.13	565.11	571.	32.13	570.11	575.	32.13	575.11	580.	33.13	581.11	583.	32.13	584.11
14	587.	32.13	592.10	586.	32.13	592.10	584.	33.13	591.10	580.	35.13	586.10	577.	39.13	589. 9	568.	38.13	581. 9
	560.	41.13	564. 7	542.	37.12	537. 9	517.	39.15	512. 9	508.	31.15	509. 9	499.	28.15	492.12	497.	22.15	492.12
15	497.	18.15	494.13	498.	18.15	496.13	499.	17.15	499.12	500.	17.15	500.12	501.	17.15	502.11	501.	16.15	501.10
	499.	16.16	499.11	499.	16.16	499.11	499.	16.16	499.11	499.	16.16	499.11	500.	16.16	498.12	500.	16.16	499.12
16	501.	15.16	500.12	501.	15.16	500.12	502.	15.16	500.12	502.	15.16	500.12	502.	15.16	501.12	502.	15.16	500.12
	502.	15.16	500.12	502.	14.16	500.12	502.	14.16	500.12	502.	14.16	501.11	500.	16.16	500.12	500.	16.16	500.12
17	500.	15.16	500.12	500.	14.16	500.12	501.	13.16	501.11	500.	13.15	499.11	500.	12.15	501.10	500.	12.15	500.10
	499.	12.15	500.10	498.	11.15	499.10	498.	10.15	498.10	497.	10.15	498.10	497.	10.16	496.12	497.	10.16	496.12
18	496.	10.16	496.12	495.	8.16	494.10	494.	8.17	493.10	494.	9.14	493. 9	494.	9.14	493.11	494.	9.14	493.11
	493.	9.15	493.12	494.	9.15	495.10	494.	9.15	495.10	494.	9.15	495.10	493.	9.15	495.10	493.	10.15	495.10
19	492.	9.16	494.11	492.	9.16	493.10	492.	9.16	495.10	492.	9.16	495.10	492.	9.18	494.11	492.	9.18	494.11
	491.	10.18	494.11	491.	9.18	494.11	491.	9.18	494.13	491.	10.18	493.14	491.	10.18	493.14	492.	10.17	493.12
20	492.	10.17	493.12	492.	10.17	493.12	492.	10.17	493.12	492.	11.17	493.12	492.	10.17	493.12	492.	11.17	493.12
	493.	11.18	493.12	493.	11.18	493.12	493.	11.18	493.12	493.	11.18	494.12	493.	11.19	494.13	493.	12.19	493.13
21	494.	12.19	494.13	494.	12.19	495.12	495.	12.19	496.12	495.	12.19	496.12	495.	14.19	497.12	494.	16.19	496.13
	495.	17.19	494.15	495.	17.19	497.17	496.	17.19	497.17	497.	15.19	500.15	498.	14.19	500.16	499.	13.19	501.16
22	501.	12.19	503.13	502.	13.19	505.13	503.	13.19	507.13	504.	13.19	507.12	505.	13.19	508.13	505.	13.19	509.13
	507.	13.19	509.14	507.	13.19	511.13	513.	26.20	511.17	513.	26.20	511.17	514.	27.20	512.17	515.	27.20	512.17
23	515.	27.20	513.17	516.	27.20	513.17	516.	27.20	514.17	517.	28.20	516.16	517.	28.20	519.15	517.	28.20	517.14
	518.	29.20	518.14	518.	30.20	518.14	518.	31.20	516.15	521.	30.19	519.14	521.	30.19	520.14	522.	30.19	520.14

Table 5

MONTHLY AVERAGE ON PATH 2 4 FOR MONTH 6 1962

UT	AVER	SDV NO	QAV NO		+ 5 MIN			+10 MIN			+15 MIN			+20 MIN			+25 MIN	
00	519.	21.24	518.20	520.	21.25	519.21	520.	22.25	518.21	519.	22.24	517.20	521.	25.25	519.19	522.	26.25	517.18
	524.	29.26	519.21	527.	32.25	520.20	530.	36.25	523.20	534.	39.25	527.20	538.	44.25	531.20	541.	46.25	536.19
01	547.	50.24	543.17	552.	52.23	546.17	556.	52.24	554.17	562.	50.25	563.18	568.	51.26	566.18	572.	52.26	573.19
	575.	51.27	570.18	577.	51.27	568.19	578.	49.28	571.19	576.	49.28	572.18	575.	50.28	568.17	572.	54.28	570.20
02	570.	56.28	566.21	569.	58.28	565.21	569.	59.28	559.21	569.	60.28	560.21	569.	60.28	564.22	569.	60.28	564.22
	570.	60.28	564.22	571.	59.28	566.22	574.	60.28	569.22	578.	60.28	575.22	592.	54.28	586.22	597.	53.28	601.21
03	603.	52.28	605.22	615.	36.28	614.20	622.	35.28	620.19	626.	34.28	622.18	630.	34.28	625.18	633.	34.28	629.19
	638.	34.28	631.20	641.	33.28	636.19	644.	33.28	639.19	646.	34.28	643.20	649.	35.28	645.20	651.	36.28	648.20
04	652.	35.28	650.20	655.	35.28	648.18	658.	36.28	655.18	662.	36.27	660.17	666.	36.27	664.17	671.	37.27	670.17
	676.	36.27	675.17	683.	34.28	680.17	690.	34.28	687.17	696.	33.28	694.17	703.	32.28	704.18	709.	31.28	712.19
05	715.	30.28	718.19	721.	30.28	724.18	726.	30.28	729.18	731.	31.28	734.20	735.	32.28	740.17	739.	33.28	749.17
	743.	34.28	751.16	745.	35.28	753.16	747.	36.28	755.16	749.	36.28	758.14	751.	36.28	760.14	753.	36.28	762.14
06	753.	36.28	765.18	754.	36.28	765.18	755.	37.27	763.18	756.	36.27	764.18	756.	36.27	762.17	756.	37.27	764.18
	756.	38.27	767.17	757.	38.27	764.18	757.	38.27	762.19	757.	38.27	762.19	758.	37.27	762.19	758.	37.27	761.18
07	760.	38.27	762.18	760.	38.27	765.19	761.	38.28	766.20	761.	40.28	764.21	761.	41.28	767.20	761.	40.28	763.20
	762.	41.28	763.20	763.	41.28	763.20	763.	41.28	763.20	763.	41.28	763.20	763.	42.28	765.19	764.	43.27	768.18
08	765.	43.27	768.18	765.	44.27	769.18	765.	44.27	770.19	765.	45.27	771.19	765.	46.27	769.20	765.	47.27	770.20
	766.	48.27	772.21	766.	47.27	773.21	766.	47.27	772.21	768.	45.27	774.21	771.	44.27	776.21	772.	44.27	777.21
09	773.	43.27	778.21	773.	43.27	778.21	774.	42.28	778.22	774.	41.28	779.22	774.	41.28	779.22	776.	41.28	779.22
	777.	40.28	778.23	778.	39.28	780.22	778.	39.28	781.22	779.	39.28	781.22	779.	39.28	779.21	779.	40.28	779.21
10	780.	41.28	779.21	780.	40.28	782.22	781.	40.28	781.21	782.	40.28	779.20	783.	40.28	780.20	783.	40.28	780.20
	784.	41.28	783.21	785.	41.28	784.21	785.	39.28	780.19	782.	38.28	778.19	779.	35.28	776.19	771.	34.28	769.21
11	762.	30.28	757.19	756.	28.27	753.20	747.	29.27	748.20	740.	30.27	742.20	733.	30.27	734.22	721.	32.27	724.19
	708.	36.27	709.22	695.	38.27	696.21	684.	44.27	686.21	674.	46.27	675.20	667.	47.27	666.20	661.	46.27	662.19
12	658.	45.27	658.19	657.	44.27	656.19	657.	43.28	652.19	659.	44.28	656.20	660.	45.28	652.20	651.	62.28	650.22
	655.	66.28	654.22	660.	68.28	661.22	664.	70.28	669.21	663.	84.28	672.21	653.	98.28	673.21	639.	104.27	665.19
13	624.	111.27	647.15	591.	114.24	559.16	563.	94.24	532.15	564.	82.23	541.16	570.	73.25	565.20	577.	65.25	574.20
	582.	48.25	581.19	592.	38.25	590.20	595.	34.26	598.19	599.	31.26	600.17	604.	32.26	606.16	607.	34.26	609.16
14	610.	33.26	614.15	609.	32.24	611.15	604.	40.25	604.18	603.	44.25	602.19	604.	46.25	604.18	589.	57.25	596.19
	578.	59.26	589.15	560.	50.25	566.14	531.	54.26	526.18	513.	49.25	501.21	500.	34.25	494.21	494.	22.25	492.22
15	492.	14.25	493.19	494.	10.25	495.19	496.	9.25	497.19	498.	9.25	497.17	500.	9.26	498.19	500.	9.26	498.19
	501.	9.26	499.19	501.	9.26	499.19	501.	9.26	499.18	502.	9.26	500.19	502.	9.26	501.19	503.	9.26	501.18
16	504.	9.26	502.19	504.	9.25	503.19	505.	9.25	503.19	505.	9.25	504.19	505.	9.25	505.19	505.	9.25	505.19
	506.	9.25	506.20	506.	9.25	506.20	506.	9.25	506.20	505.	9.25	506.20	505.	9.25	505.19	504.	9.25	505.19
17	504.	8.25	505.18	504.	8.25	504.18	504.	8.25	503.19	503.	8.25	503.19	502.	9.25	503.19	502.	9.25	502.17
	502.	9.25	501.19	501.	9.25	500.18	501.	9.25	501.18	501.	9.24	500.17	500.	9.24	501.18	500.	9.24	500.19
18	499.	9.24	499.18	499.	9.23	499.17	498.	10.23	498.18	498.	10.23	496.17	497.	10.23	495.18	496.	10.23	493.17
	495.	10.23	493.16	495.	10.23	493.17	495.	10.24	493.18	495.	10.24	492.18	494.	10.24	492.17	494.	10.24	492.17
19	493.	10.24	490.17	492.	9.23	490.17	492.	9.23	489.19	492.	9.23	490.17	492.	9.23	489.16	492.	9.23	489.17
	491.	9.23	489.18	491.	9.23	489.17	491.	9.24	489.20	491.	9.24	489.20	491.	9.24	489.20	490.	9.23	489.19
20	490.	10.23	488.19	489.	9.23	487.19	489.	10.23	489.19	489.	11.23	488.17	489.	11.23	488.16	489.	11.23	488.16
	489.	11.25	488.17	489.	11.25	488.16	490.	10.25	488.18	490.	10.25	489.17	491.	10.25	489.16	491.	10.25	489.16
21	492.	9.26	490.19	493.	9.26	491.16	494.	9.27	492.17	494.	9.27	492.17	495.	9.27	492.20	495.	9.27	494.17
	496.	9.27	494.19	497.	9.27	496.17	497.	10.27	497.19	497.	10.27	497.19	498.	9.27	498.19	499.	9.27	499.18
22	500.	9.27	499.17	500.	9.26	500.17	501.	9.26	501.18	502.	9.26	502.18	503.	10.26	504.19	504.	10.26	505.19
	505.	10.26	507.21	506.	11.26	507.19	507.	11.26	507.18	508.	11.26	509.19	509.	11.26	511.20	510.	11.26	511.20
23	510.	11.26	512.21	511.	11.26	513.21	513.	12.27	513.21	513.	12.27	514.21	514.	13.27	516.20	515.	13.27	516.19
	516.	13.27	516.20	517.	12.27	517.20	518.	12.27	517.19	518.	12.27	519.22	519.	13.27	520.21	520.	16.27	520.21

Table 6

MONTHLY AVERAGE ON PATH 2 4 FOR MONTH 7 1962

UT	AVER	SDV NO	QAV NO		+ 5 MIN			+10 MIN			+15 MIN			+20 MIN			+25 MIN	
00	514.	35.27	513.21	514.	36.27	513.21	514.	37.27	515.20	514.	38.27	515.20	514.	39.27	516.20	513.	40.27	514.19
	513.	41.27	511.20	516.	40.26	514.19	518.	42.26	516.19	519.	43.26	515.20	520.	45.26	516.20	522.	51.26	519.18
01	530.	62.27	525.19	552.	57.26	548.16	562.	59.26	560.16	566.	59.26	558.16	569.	59.27	563.17	572.	61.27	568.17
	581.	60.27	582.18	589.	49.26	592.14	592.	47.26	595.16	591.	46.26	593.16	590.	46.27	591.17	588.	49.27	588.15
02	586.	52.27	585.17	588.	53.26	589.17	587.	56.26	591.16	587.	57.26	586.17	584.	59.26	582.21	580.	61.26	579.21
	578.	63.26	574.22	576.	65.26	574.22	576.	67.26	577.21	576.	67.26	574.22	574.	66.27	573.23	589.	63.27	582.21
03	593.	59.27	591.20	599.	54.27	604.18	605.	49.27	613.16	607.	44.27	613.14	610.	42.27	616.13	613.	40.27	620.14
	616.	39.27	617.14	619.	39.27	622.15	623.	39.27	626.17	625.	38.27	629.17	628.	38.27	632.17	631.	39.27	635.17
04	634.	39.27	638.17	638.	40.27	645.18	642.	40.27	651.19	647.	40.27	655.19	652.	39.27	656.17	658.	39.27	661.17
	663.	39.27	666.17	670.	38.27	673.17	676.	38.27	678.17	683.	38.27	682.16	689.	38.27	686.17	695.	38.27	694.16
05	700.	38.27	702.17	706.	37.27	707.17	711.	36.27	712.17	714.	36.27	714.19	718.	36.27	715.18	720.	36.27	712.16
	723.	37.27	719.18	726.	37.27	721.16	728.	38.27	723.16	728.	38.27	726.15	728.	38.27	727.17	729.	37.27	728.17
06	732.	37.27	731.17	732.	37.27	732.17	732.	36.27	735.18	733.	37.27	736.18	735.	38.27	739.19	735.	38.27	741.19
	736.	38.27	740.16	736.	40.27	741.18	737.	42.27	738.20	738.	42.27	741.19	739.	42.27	742.19	740.	40.27	743.18
07	739.	41.27	740.19	740.	40.27	743.18	742.	39.27	744.18	744.	39.27	747.17	745.	38.27	748.17	746.	39.27	750.17
	746.	39.27	751.17	746.	39.27	751.17	746.	39.27	748.16	746.	40.27	750.17	746.	41.27	751.18	746.	41.27	749.19
08	746.	41.27	747.20	748.	43.27	748.20	749.	44.27	751.19	749.	44.27	749.20	749.	45.27	751.19	750.	44.27	752.19
	750.	44.27	751.19	750.	43.27	752.19	750.	42.27	752.19	752.	41.27	755.19	752.	40.27	756.19	753.	39.27	758.19
09	753.	38.27	756.18	752.	47.27	756.21	754.	47.27	755.20	756.	45.27	756.20	758.	43.27	761.18	762.	42.27	762.18
	764.	42.27	764.18	765.	41.27	762.19	766.	41.27	761.20	762.	46.27	760.20	759.	56.27	760.20	759.	53.27	759.20
10	759.	50.27	757.21	760.	49.27	757.21	760.	50.27	757.21	761.	50.27	759.21	763.	50.27	760.21	765.	48.27	762.21
	765.	47.27	759.20	766.	45.27	760.20	767.	43.27	760.20	770.	42.27	762.20	772.	42.27	765.20	765.	37.27	760.21
11	757.	37.27	754.20	750.	36.27	750.19	743.	35.27	744.18	735.	36.27	735.19	729.	37.27	729.20	720.	35.27	716.18
	709.	35.27	707.18	697.	34.27	697.19	688.	34.27	694.17	678.	36.27	682.18	671.	36.27	672.19	666.	38.27	668.17
12	662.	38.27	667.19	658.	38.27	661.20	655.	40.27	654.20	652.	40.27	652.20	650.	41.27	653.19	650.	41.27	653.19
	647.	44.27	657.19	642.	51.26	649.18	632.	68.26	648.19	621.	80.24	633.16	614.	84.25	611.17	608.	90.25	596.14
13	601.	89.24	588.14	591.	87.23	578.15	597.	77.23	577.15	609.	73.23	588.18	606.	66.23	586.18	603.	57.23	592.18
	596.	46.23	592.16	595.	33.24	588.18	598.	28.25	595.18	602.	28.25	600.18	607.	29.25	604.16	612.	32.25	610.14
14	614.	32.25	614.15	615.	33.25	616.15	614.	34.25	604.15	610.	48.25	611.18	611.	49.25	615.19	609.	55.25	619.19
	609.	59.25	623.18	606.	61.25	614.17	587.	63.25	594.14	562.	61.25	559.17	528.	55.25	525.17	506.	27.24	504.16
15	497.	21.24	497.17	497.	16.24	496.20	498.	15.25	499.19	500.	12.25	501.19	502.	11.25	502.18	502.	10.25	502.19
	502.	11.25	502.21	501.	11.25	501.20	501.	11.25	502.20	501.	11.25	502.20	501.	11.25	501.19	501.	10.25	502.20
16	502.	11.25	502.20	502.	10.25	503.20	502.	10.25	503.20	502.	10.25	503.20	503.	10.25	503.18	503.	10.25	503.19
	503.	11.25	503.19	503.	10.25	503.19	503.	10.25	503.19	503.	10.25	503.19	503.	10.25	504.18	503.	9.25	504.18
17	502.	9.25	503.18	502.	9.25	503.18	502.	9.25	502.19	502.	9.25	502.19	501.	9.25	501.19	501.	8.25	501.19
	500.	8.25	501.19	500.	8.25	501.19	500.	8.25	501.18	499.	8.25	501.19	499.	8.25	501.18	498.	7.25	500.19
18	497.	8.25	499.19	497.	8.25	498.19	496.	7.25	496.20	495.	7.24	496.20	495.	7.24	495.20	494.	7.24	495.18
	494.	6.24	495.18	494.	6.24	495.18	493.	6.24	494.20	493.	6.24	494.20	493.	7.24	494.19	493.	7.24	494.19
19	492.	7.24	494.19	492.	7.24	494.19	492.	8.24	493.19	492.	8.24	493.19	492.	8.24	492.18	491.	8.24	492.17
	491.	8.25	492.18	491.	8.23	492.17	491.	8.23	491.18	491.	8.23	490.17	491.	8.23	491.15	491.	8.23	490.17
20	491.	8.24	490.17	491.	8.24	490.17	491.	9.24	490.18	491.	9.24	490.18	491.	9.24	490.17	491.	9.23	490.16
	491.	10.23	490.16	491.	9.23	491.16	492.	10.23	492.16	492.	10.23	492.16	491.	10.25	491.16	492.	10.24	491.17
21	493.	10.25	493.16	494.	10.25	493.15	495.	10.26	495.16	495.	10.26	495.18	496.	10.26	495.17	496.	10.26	496.18
	497.	10.26	497.18	498.	10.26	497.17	499.	10.26	497.16	499.	11.26	497.16	500.	11.26	498.16	501.	11.26	498.17
22	502.	11.26	499.17	502.	11.26	500.16	503.	11.27	501.17	504.	11.27	503.16	505.	11.27	505.18	506.	11.27	507.17
	507.	11.27	507.18	508.	12.26	508.17	509.	12.26	509.17	510.	13.26	510.17	511.	13.26	511.17	511.	13.26	512.18
23	512.	13.26	513.18	513.	13.26	513.18	514.	14.26	514.18	514.	14.26	514.18	515.	15.26	514.19	516.	15.26	514.19
	516.	15.26	515.19	516.	16.26	515.19	517.	16.26	516.19	517.	16.26	516.19	517.	17.26	516.19	517.	17.26	516.19

Table 7

MONTHLY AVERAGE ON PATH 2 4 FOR MONTH 8 1962

UT	AVER	SDV NO	QAV NO		+ 5 MIN			+10 MIN			+15 MIN			+20 MIN			+25 MIN	
00	523.	44.18	509.16	524.	44.18	510.16	525.	43.18	511.16	525.	44.18	511.16	527.	45.19	513.17	529.	46.19	516.17
	532.	48.19	521.16	536.	49.19	525.16	540.	51.19	526.15	546.	52.19	532.15	552.	54.19	540.12	561.	50.19	547.13
01	570.	51.19	565.14	576.	49.19	572.13	583.	47.19	575.14	584.	46.19	578.11	584.	45.19	578.11	584.	44.19	577.11
	582.	44.19	573.12	579.	44.19	576.12	575.	46.19	566.14	572.	48.19	562.14	569.	52.19	558.14	567.	55.19	553.12
02	564.	60.19	548.12	562.	63.19	545.12	561.	67.19	543.12	560.	71.18	538.12	558.	74.18	537.12	561.	76.18	541.12
	564.	79.18	545.12	566.	79.18	550.12	571.	78.19	571.13	589.	67.18	585.12	599.	65.18	599.13	612.	55.18	599.15
03	623.	50.19	612.16	628.	49.19	617.16	633.	49.19	625.15	634.	49.19	626.15	635.	49.19	628.15	636.	49.19	629.15
	637.	49.19	630.15	638.	49.19	630.15	640.	50.19	635.14	643.	50.19	632.16	647.	51.19	636.16	652.	51.19	641.16
04	658.	52.19	650.15	667.	52.19	659.15	676.	53.19	668.15	685.	52.19	677.15	695.	52.19	692.16	702.	52.19	699.16
	709.	52.19	707.16	714.	53.19	712.16	721.	54.19	718.16	725.	54.19	723.16	730.	55.19	731.15	734.	54.19	736.15
05	740.	54.19	742.15	742.	55.19	744.15	746.	56.19	743.14	749.	56.19	746.14	752.	56.19	750.14	753.	54.19	751.14
	754.	52.19	752.14	755.	51.19	756.14	757.	51.19	760.14	758.	49.19	761.14	759.	47.19	763.14	760.	47.19	764.14
06	761.	48.19	766.14	765.	45.19	769.14	768.	42.19	769.13	773.	38.19	771.14	778.	37.19	777.12	779.	33.19	781.13
	779.	31.19	777.13	780.	31.19	781.14	781.	33.19	784.15	782.	33.19	784.15	783.	34.19	783.14	785.	26.19	783.13
07	788.	25.19	787.12	789.	27.19	784.12	789.	31.19	786.13	791.	31.19	787.13	792.	32.19	789.13	789.	28.19	788.13
	785.	31.19	784.13	783.	32.19	782.13	781.	33.19	781.13	781.	34.19	781.13	782.	36.19	781.13	781.	38.19	779.14
08	779.	40.19	779.14	780.	43.19	783.13	781.	48.19	781.14	782.	47.19	775.14	784.	48.19	776.14	786.	46.19	775.13
	788.	45.19	779.13	791.	43.19	787.14	794.	42.19	794.15	795.	40.19	798.16	796.	38.19	804.16	797.	38.19	809.15
09	799.	39.19	808.14	800.	39.19	809.14	802.	39.19	810.14	801.	38.19	810.15	799.	38.19	808.15	799.	37.19	807.15
	798.	38.19	804.16	796.	38.19	801.16	793.	40.19	799.16	793.	40.19	798.16	792.	41.19	798.16	792.	42.19	798.16
10	792.	42.19	795.15	793.	43.19	793.14	794.	44.19	797.13	794.	43.19	798.13	794.	43.19	799.13	794.	44.19	797.13
	793.	45.19	791.14	793.	44.19	787.15	791.	44.19	786.15	793.	45.19	790.14	794.	46.19	791.14	789.	46.19	784.15
11	783.	48.19	776.14	774.	47.19	770.13	764.	47.19	768.15	757.	43.19	765.14	750.	40.19	757.14	742.	38.19	750.14
	734.	37.19	742.14	727.	35.19	737.13	720.	34.19	720.12	711.	33.19	711.14	701.	34.19	698.13	692.	35.19	689.13
12	683.	37.19	682.14	680.	37.19	680.13	675.	37.19	675.13	673.	37.19	673.13	669.	38.19	674.12	667.	39.19	672.12
	664.	41.19	667.11	659.	40.19	661.11	654.	42.19	659.12	652.	44.19	662.11	650.	57.19	648.13	646.	60.19	638.14
13	642.	68.19	636.13	639.	63.15	621.11	638.	69.15	627.10	618.	72.15	598.10	597.	98.15	578.11	585.	85.14	575.11
	584.	74.15	581.11	582.	66.15	579.11	581.	60.16	583.13	571.	39.14	580.11	577.	38.14	591.10	583.	36.14	594.12
14	592.	36.15	604.11	599.	36.15	613.12	606.	36.15	619.11	597.	47.15	612.13	595.	86.16	608.14	598.	82.16	611.14
	603.	78.16	614.14	604.	75.15	614.13	606.	71.15	615.13	605.	72.15	610.13	594.	79.16	606.13	567.	66.15	560. 9
15	551.	69.15	532. 9	521.	62.13	505.10	503.	66.14	499.12	487.	36.13	492.11	482.	29.15	484.11	485.	27.15	484.12
	489.	25.16	491.12	491.	25.16	493.12	493.	24.16	496.12	493.	24.16	496.12	493.	24.16	495.12	493.	24.16	496.12
16	493.	23.16	496.12	494.	23.16	497.12	494.	23.16	498.12	495.	23.16	498.12	495.	23.16	498.12	496.	22.16	499.12
	497.	22.16	500.12	497.	22.16	501.12	498.	21.16	501.12	498.	21.16	502.13	498.	20.16	502.13	497.	20.16	501.13
17	498.	20.16	501.12	498.	19.16	501.12	499.	19.16	501.12	498.	18.16	501.12	498.	18.16	500.11	498.	19.16	499.11
	498.	19.16	500.12	498.	18.16	500.12	498.	18.16	500.12	498.	18.16	500.12	498.	17.16	500.12	498.	18.16	500.12
18	498.	18.16	500.12	498.	18.16	499.12	497.	18.16	499.12	497.	18.16	499.12	496.	18.16	498.12	496.	18.16	498.12
	496.	17.16	498.12	495.	17.16	497.12	495.	17.16	497.12	495.	17.16	496.12	494.	16.16	494.11	494.	16.16	494.11
19	494.	16.16	493.11	493.	17.16	493.11	493.	17.16	492.11	493.	17.16	492.11	493.	17.16	494.10	493.	17.16	494.10
	493.	17.16	492.11	493.	17.16	492.11	492.	17.16	491.11	492.	17.16	492.11	492.	17.16	492.11	492.	17.16	492.11
20	492.	17.16	492.11	492.	17.16	491.11	492.	16.16	491.11	492.	17.16	491.11	493.	17.16	492.11	493.	17.16	490.12
	493.	16.16	490.12	493.	16.16	490.12	494.	16.16	491.12	494.	16.16	491.12	494.	16.16	493.11	494.	16.16	493.11
21	493.	17.18	492.13	493.	17.18	492.13	493.	17.18	493.13	494.	17.18	495.12	495.	17.18	496.12	496.	17.18	496.12
	497.	16.18	497.12	498.	17.18	497.12	498.	17.18	498.12	499.	17.18	498.12	499.	17.19	496.14	500.	18.19	498.14
22	502.	18.19	497.13	503.	19.19	498.13	504.	20.19	499.13	505.	20.19	500.13	507.	21.19	502.13	507.	21.19	502.13
	508.	21.19	503.13	509.	21.19	505.13	511.	21.19	506.13	511.	22.19	508.12	512.	22.19	509.12	513.	23.19	510.12
23	514.	23.19	511.12	515.	23.19	512.12	517.	24.19	517.12	517.	24.19	516.13	518.	24.19	512.13	519.	24.19	515.14
	520.	25.19	516.14	520.	26.19	516.14	521.	27.19	516.14	522.	28.19	517.14	523.	29.19	517.14	524.	30.19	521.15

Table 8

MONTHLY AVERAGE ON PATH 2 4 FOR MONTH 9 1962

UT	AVER	SDV NO	QAV NO	+ 5 MIN			+10 MIN			+15 MIN			+20 MIN			+25 MIN		
00	509.	27.22	502.14	509.	27.21	504.14	510.	27.21	507.14	511.	30.18	510.12	514.	33.18	516.13	521.	33.16	523. 9
	523.	35.17	521. 9	529.	38.15	530. 7	539.	42.16	545. 8	545.	42.16	549.10	556.	47.17	563.12	566.	43.15	579. 9
01	571.	42.15	582. 9	575.	42.13	590. 7	577.	41.13	585. 8	585.	34.12	593. 7	587.	32.12	597. 8	590.	37.10	603. 5
	588.	42.11	580. 6	591.	44.10	594. 4	585.	48.11	580. 6	585.	50.11	596. 6	585.	53.11	597. 6	585.	54.11	597. 6
02	585.	56.11	598. 6	575.	54.10	597. 6	573.	55.10	589. 5	575.	53.10	599. 6	578.	49.13	596. 9	579.	47.13	592. 8
	586.	44.17	596.12	587.	42.17	595.11	586.	42.19	599.13	588.	42.19	596.14	591.	42.20	597.14	593.	42.20	599.14
03	594.	42.20	604.13	595.	44.20	605.13	598.	46.21	606.13	601.	45.21	612.14	605.	46.22	616.15	609.	45.22	620.15
	613.	44.22	629.17	620.	44.22	635.17	628.	43.23	641.17	636.	41.23	649.15	645.	40.23	657.17	653.	39.23	666.18
04	660.	39.23	670.19	666.	40.23	677.19	674.	40.23	684.19	681.	39.23	691.19	688.	39.23	699.19	694.	39.23	703.18
	701.	39.23	710.18	706.	37.23	714.18	711.	36.23	720.18	715.	35.23	722.17	719.	36.23	724.18	722.	36.23	726.18
05	729.	39.24	733.20	731.	40.23	736.19	734.	41.23	738.19	736.	41.23	740.19	738.	41.23	742.19	740.	40.23	741.18
	742.	40.23	745.19	744.	40.23	747.19	747.	39.23	750.19	749.	39.23	751.19	751.	38.23	755.18	753.	35.23	755.19
06	756.	36.23	756.18	758.	36.22	758.17	760.	36.22	760.17	760.	37.22	759.17	760.	39.22	756.16	761.	37.22	756.16
	762.	35.22	759.15	764.	33.22	760.15	766.	32.22	761.15	768.	32.22	764.15	770.	34.22	768.15	773.	36.22	771.15
07	776.	38.22	776.16	777.	38.22	777.16	779.	38.22	779.16	780.	37.22	782.15	780.	38.23	781.16	779.	37.23	780.16
	776.	37.23	779.16	779.	37.23	780.16	781.	38.23	780.17	782.	38.23	781.17	785.	39.23	784.17	784.	39.23	783.17
08	783.	40.23	783.17	785.	41.23	785.17	785.	43.23	785.17	785.	44.23	787.18	785.	46.23	788.18	784.	47.23	787.18
	783.	48.23	786.18	783.	47.23	786.18	783.	46.23	786.18	781.	41.23	785.18	780.	37.23	788.17	781.	37.23	786.17
09	783.	37.23	788.17	784.	38.23	788.17	784.	39.23	788.17	784.	38.23	787.17	783.	37.23	786.17	784.	36.23	786.15
	784.	35.23	786.15	783.	35.23	785.15	782.	35.23	787.14	783.	35.23	785.15	784.	34.23	785.16	784.	34.23	783.15
10	785.	33.23	785.14	786.	33.23	790.15	786.	34.23	786.17	787.	35.23	786.17	787.	37.23	784.17	786.	35.23	784.17
	786.	33.23	786.18	787.	33.23	787.18	788.	33.23	787.17	788.	33.23	787.17	789.	33.23	787.17	790.	32.23	791.18
11	790.	31.23	791.18	785.	30.23	788.19	780.	30.23	778.17	772.	29.22	770.17	763.	29.22	760.17	755.	30.22	753.16
	746.	32.22	747.15	738.	32.22	741.16	728.	33.22	729.15	717.	32.22	716.15	705.	31.22	700.16	696.	34.22	691.15
12	688.	38.23	680.18	682.	44.21	671.16	677.	49.21	669.17	673.	47.21	662.16	668.	46.21	659.18	666.	46.21	657.18
	665.	45.22	656.19	669.	41.21	658.19	670.	38.21	660.19	671.	36.21	663.18	672.	36.21	667.17	676.	37.20	675.15
13	679.	39.20	678.16	684.	43.17	685.13	684.	49.16	686.12	672.	49.15	684.10	654.	72.16	683.10	645.	73.14	661. 9
	640.	74.14	645. 8	635.	73.13	632. 7	626.	72.15	610.10	619.	61.14	597.10	619.	56.15	600.11	616.	50.14	599.12
14	611.	49.15	602.12	603.	25.15	603.11	603.	22.18	602.13	604.	20.18	603.13	601.	27.19	603.15	604.	29.18	607.13
	607.	30.19	610.14	609.	33.18	612.13	610.	35.18	612.12	612.	36.17	614.11	613.	38.17	616.11	609.	37.15	611. 9
15	599.	48.16	608.13	581.	56.14	597.10	542.	75.15	563. 8	519.	57.16	522.11	491.	52.20	474.12	483.	31.19	475.11
	476.	19.19	481.13	480.	16.19	484.14	485.	16.19	486.14	487.	16.19	488.14	490.	16.19	491.14	490.	16.19	491.14
16	491.	15.19	493.15	492.	15.19	494.15	493.	16.19	495.15	494.	15.19	495.15	494.	15.19	496.16	494.	15.19	497.16
	495.	15.19	498.16	496.	14.19	498.16	496.	14.19	499.16	497.	14.19	499.16	498.	14.19	500.16	498.	15.19	501.16
17	499.	15.19	500.15	499.	15.19	500.16	500.	15.19	501.16	500.	14.19	501.17	499.	14.19	500.17	500.	14.18	501.16
	499.	14.18	500.15	499.	15.16	499.13	499.	15.16	499.13	499.	15.16	499.13	499.	15.16	499.13	499.	15.16	499.13
18	497.	14.16	498.14	497.	14.16	498.14	497.	14.16	497.14	496.	14.16	497.14	495.	13.17	495.15	495.	13.17	496.15
	496.	12.19	495.16	496.	12.19	495.16	495.	12.19	495.16	495.	12.19	495.16	495.	11.19	495.15	495.	11.19	496.17
19	494.	11.20	495.18	494.	11.20	495.18	494.	11.20	495.16	493.	11.19	495.15	492.	12.19	494.15	492.	11.19	494.15
	492.	11.19	494.15	492.	11.19	494.15	493.	11.19	494.15	492.	11.19	492.14	491.	11.19	491.15	491.	11.18	493.14
20	492.	11.18	492.13	492.	11.18	493.14	493.	11.19	493.15	493.	11.18	493.15	493.	11.18	494.16	493.	12.18	495.16
	494.	12.18	494.15	494.	12.18	494.15	494.	13.18	494.15	494.	13.18	495.16	495.	12.20	496.18	496.	12.20	496.18
21	495.	14.23	497.20	495.	15.23	497.20	496.	15.23	498.20	497.	15.23	498.20	497.	15.23	499.20	498.	15.23	500.20
	498.	15.23	500.20	499.	16.22	501.19	500.	16.22	502.19	501.	16.22	502.19	501.	16.22	503.17	502.	16.22	504.17
22	501.	19.23	505.19	501.	19.23	506.19	503.	20.23	508.19	504.	20.23	509.19	505.	19.23	509.18	505.	19.23	510.18
	506.	18.23	509.16	507.	18.23	511.18	509.	19.24	513.19	509.	19.23	513.18	510.	20.23	513.17	510.	20.23	513.17
23	511.	20.23	513.17	511.	20.23	513.17	511.	20.23	513.17	512.	20.23	513.17	512.	20.23	514.15	512.	20.23	515.16
	513.	20.23	516.16	513.	20.23	515.16	513.	20.23	514.17	512.	20.22	511.17	512.	20.22	511.17	511.	20.22	510.17

Table 9

MONTHLY AVERAGE ON PATH 2 4 FOR MONTH 10 1962

UT	AVER	SDV NO	QAV NO		+ 5 MIN			+10 MIN			+15 MIN			+20 MIN			+25 MIN	
00	505.	39.11	516. 8	522.	39. 9	536. 6	527.	49. 9	535. 7	531.	59. 9	550. 8	536.	71. 9	559. 8	548.	77. 9	575. 8
	560.	90. 9	591. 8	567.	95. 9	599. 8	574.	101. 9	608. 8	572.	99. 9	606. 8	570.	98. 9	603. 8	569.	97. 9	603. 8
01	568.	97. 9	601. 8	567.	95. 9	599. 8	566.	93. 9	598. 8	566.	88. 9	595. 8	565.	84. 9	593. 8	566.	80. 9	593. 8
	568.	77. 9	593. 8	571.	76. 9	588. 7	575.	75. 9	579. 6	574.	75. 9	576. 6	574.	76. 9	574. 6	575.	74. 9	587. 7
02	576.	72. 9	602. 6	572.	73. 8	584. 6	575.	72. 8	604. 5	576.	70. 8	613. 6	577.	68. 8	614. 6	576.	69. 8	614. 6
	576.	70. 8	615. 6	583.	65. 8	618. 6	582.	63. 9	603. 6	587.	58. 9	607. 6	593.	56. 9	612. 6	599.	56. 9	618. 6
03	615.	62.11	627. 8	621.	62.11	625. 7	629.	62.11	630. 7	638.	56.11	637. 7	648.	51.11	644. 7	659.	49.11	655. 7
	670.	48.11	665. 7	678.	47.11	666. 8	686.	48.11	680. 7	691.	47.11	693. 6	696.	47.11	700. 6	701.	48.11	705. 6
04	707.	50.11	703. 7	713.	51.11	708. 7	718.	52.11	713. 7	721.	52.11	717. 7	725.	51.11	721. 7	727.	50.11	722. 7
	729.	49.11	724. 7	738.	46.10	734. 6	741.	45.10	727. 5	742.	44.10	729. 5	743.	43.10	731. 5	744.	43.10	731. 5
05	744.	44.10	732. 5	745.	44.10	732. 5	746.	46.10	741. 4	746.	47.10	742. 6	745.	49.10	742. 6	744.	45.10	734. 5
	742.	41.10	742. 6	740.	41.10	740. 6	738.	42.10	738. 6	737.	43.10	737. 6	736.	46.10	735. 6	736.	49.10	735. 6
06	737.	53.10	743. 5	739.	56.10	745. 5	742.	60.10	737. 6	742.	62.10	746. 7	742.	64.10	746. 7	742.	61.10	746. 7
	743.	59.10	737. 6	742.	58.10	737. 6	742.	57.10	736. 6	740.	59.10	734. 6	739.	60.10	742. 7	739.	60.10	732. 6
07	739.	59.10	731. 6	740.	59.10	732. 6	742.	60.10	733. 6	742.	60.10	735. 6	742.	61.10	737. 6	740.	62.10	736. 6
	735.	61.11	729. 7	734.	63.11	729. 7	734.	65.11	716. 6	731.	64.11	708. 7	727.	64.11	717. 8	724.	65.11	713. 8
08	721.	68.11	727. 8	720.	66.11	725. 8	719.	65.11	716. 9	721.	62.11	718. 9	722.	60.11	728. 8	722.	60.11	725. 8
	721.	61.11	715. 9	721.	59.11	721. 8	722.	57.11	721. 8	722.	57.11	720. 8	722.	57.11	713. 9	723.	56.11	715. 9
09	725.	55.11	717. 9	726.	54.11	712. 8	728.	54.11	715. 8	728.	54.11	716. 8	728.	53.11	716. 8	729.	55.11	718. 8
	730.	57.11	719. 8	733.	59.11	731. 9	735.	63.11	735. 9	736.	61.11	735. 9	736.	62.11	727. 8	738.	63.11	727. 8
10	740.	64.11	728. 8	740.	60.11	735. 7	740.	56.11	736. 7	737.	52.11	741. 8	734.	49.11	736. 8	734.	49.11	737. 8
	734.	49.11	731. 7	734.	50.11	731. 7	735.	51.11	731. 7	738.	52.11	734. 9	741.	54.11	737. 9	742.	51.11	739. 9
11	743.	50.11	742. 9	737.	49.11	729. 8	732.	50.11	729. 7	726.	49.11	725. 7	721.	49.11	721. 7	721.	53.11	729. 6
	718.	55.11	730. 6	713.	53.11	729. 6	709.	53.11	725. 6	699.	52.10	716. 5	696.	54.10	712. 5	690.	54.10	693. 6
12	685.	56.10	684. 6	678.	58. 9	666. 6	675.	57. 9	664. 6	672.	56. 9	662. 6	669.	55. 9	668. 7	667.	55. 9	665. 7
	665.	56. 9	663. 7	663.	55. 9	663. 7	673.	62.10	672. 6	677.	65.10	655. 6	678.	66.10	668. 7	678.	64.10	678. 6
13	678.	63.10	680. 6	679.	63.10	681. 6	680.	64.10	683. 6	681.	64.10	685. 6	681.	65.10	686. 6	683.	63.10	687. 6
	684.	61.10	688. 6	683.	62.10	687. 6	683.	63.10	688. 6	682.	65.10	687. 6	681.	67.10	687. 6	677.	65.10	683. 6
14	669.	62.10	673. 6	646.	54. 9	643. 7	618.	71.10	630. 7	617.	62.10	626. 7	617.	54.10	623. 7	612.	47.10	615. 7
	608.	41.10	608. 7	606.	40.10	606. 7	604.	39.10	596. 6	603.	39.10	595. 6	596.	40.11	589. 7	593.	42.11	582. 8
15	591.	45.11	580. 8	585.	48.11	574. 8	579.	50.11	567. 8	567.	50.11	562. 9	557.	53.11	550. 9	540.	56.10	530. 8
	526.	59.10	508. 9	512.	34.10	501. 7	492.	29.11	491. 9	493.	27.11	496. 8	494.	26.11	497. 8	495.	26.11	494. 7
16	495.	25.11	494. 7	496.	24.11	491. 6	497.	23.11	492. 6	496.	23.11	494. 5	495.	22.11	493. 5	495.	22.11	493. 5
	496.	22.11	490. 6	496.	22.11	493. 5	496.	22.11	490. 6	497.	21.11	494. 5	497.	20.11	495. 5	497.	21.11	494. 5
17	498.	21.11	494. 5	498.	20.11	495. 5	499.	20.11	496. 5	499.	20.11	496. 5	499.	20.11	496. 5	499.	19.11	496. 5
	499.	18.11	497. 5	499.	18.11	497. 5	499.	19.11	500. 6	499.	19.11	500. 6	499.	18.11	495. 5	499.	19.11	496. 7
18	499.	19.11	494. 8	499.	19.11	494. 8	498.	19.11	495. 8	498.	19.11	494. 8	498.	19.11	494. 8	498.	18.11	494. 8
	498.	18.11	495. 8	499.	17.10	496. 7	497.	17.11	493. 8	497.	17.11	493. 8	497.	17.11	493. 8	496.	16.11	495. 7
19	496.	16.11	494. 7	496.	16.11	495. 7	496.	15.11	495. 7	496.	15.11	495. 7	496.	16.11	494. 7	497.	15.11	497. 6
	497.	15.11	494. 7	497.	15.11	493. 8	498.	15.11	494. 8	507.	34.11	497.10	515.	61.11	497.10	506.	34.11	497.10
20	497.	15.11	495. 6	497.	14.11	497. 7	497.	14.11	497. 7	497.	14.11	497. 7	497.	14.11	497. 7	498.	15.11	497. 7
	498.	15.11	498. 7	498.	15.11	500. 8	498.	14.11	500. 8	499.	14.11	498. 7	499.	13.11	498. 7	499.	13.11	499. 7
21	500.	13.11	499. 7	500.	13.11	500. 7	500.	13.11	500. 7	500.	13.11	500. 7	501.	13.11	500. 7	501.	13.11	500. 7
	501.	13.11	500. 7	501.	12.11	501. 7	502.	12.11	501. 7	502.	12.11	501. 7	503.	12.11	501. 7	503.	11.11	502. 7
22	504.	11.11	502. 7	504.	11.11	502. 7	505.	12.11	502. 7	505.	12.11	502. 7	506.	12.11	502. 8	505.	13.11	502. 8
	505.	13.11	504. 7	505.	13.11	504. 7	505.	13.11	502. 8	505.	13.11	502. 8	505.	14.11	503. 8	506.	14.11	503. 8
23	506.	14.11	506. 9	507.	14.11	506. 9	507.	14.11	506. 9	507.	15.11	506. 9	507.	14.11	507. 9	508.	15.11	507. 9
	508.	15.11	507. 9	508.	16.11	508. 9	509.	17.11	509. 9	509.	19.11	510. 9	509.	21.11	508. 8	510.	24.11	509. 8

Table 10

MONTHLY AVERAGE ON PATH 2 4 FOR MONTH 11 1962

UT	AVER	SDV NO	QAV NO		+ 5 MIN			+10 MIN			+15 MIN			+20 MIN			+25 MIN	
00	530.	29.19	529.15	544.	24.17	544.14	548.	34.18	550.14	553.	34.18	553.15	558.	38.18	558.15	559.	39.18	560.15
	561.	40.18	564.14	558.	42.18	562.14	556.	44.18	560.14	557.	44.17	557.14	554.	48.17	554.12	554.	50.17	548.11
01	554.	54.17	545.11	559.	58.15	546. 9	561.	61.15	546. 9	575.	57.15	566. 6	588.	79.15	592.11	591.	79.15	589.10
	594.	79.16	592.11	598.	74.16	586.12	602.	70.17	592.13	600.	70.17	587.14	599.	70.17	587.14	597.	68.17	587.14
02	600.	67.18	586.14	598.	68.18	585.14	596.	69.18	583.14	596.	69.18	584.14	596.	68.18	585.14	596.	66.18	586.14
	596.	64.18	597.14	600.	64.18	596.15	604.	64.18	600.15	609.	64.18	609.14	617.	64.19	619.15	621.	64.19	624.15
03	626.	64.19	629.15	633.	65.19	636.15	639.	65.19	638.14	643.	66.19	637.13	648.	67.19	642.13	652.	68.19	639.12
	657.	67.20	651.14	661.	68.20	649.13	665.	69.20	653.13	671.	69.20	658.13	676.	69.20	663.13	680.	69.20	667.13
04	684.	70.20	672.15	687.	70.20	681.16	690.	71.20	685.16	693.	71.20	687.16	695.	71.20	689.16	696.	71.20	690.16
	697.	71.20	691.16	700.	71.20	694.16	702.	71.20	697.16	708.	72.20	708.17	714.	76.20	707.16	718.	77.19	712.15
05	720.	76.19	720.14	724.	76.19	725.14	727.	76.19	730.14	726.	74.19	734.15	725.	73.19	733.15	727.	72.19	740.16
	730.	72.19	738.15	730.	70.19	742.16	730.	69.19	737.15	732.	69.19	739.15	734.	69.19	741.13	735.	68.19	747.14
06	736.	67.19	748.14	736.	66.19	748.14	738.	65.19	749.14	739.	65.19	751.14	740.	65.19	752.14	742.	66.19	753.14
	743.	66.19	748.15	755.	48.18	760.11	757.	48.18	762.11	758.	47.18	759.12	760.	46.18	761.12	762.	47.18	767.11
07	764.	48.18	769.11	765.	47.18	770.11	765.	46.18	766.12	765.	48.18	773.11	765.	50.18	779.12	765.	52.18	776.11
	765.	54.18	776.11	766.	53.18	777.11	768.	52.18	778.11	768.	51.18	778.11	768.	51.18	778.11	769.	52.18	778.11
08	770.	52.18	778.11	771.	52.18	780.11	773.	53.18	785.12	773.	54.18	786.12	774.	55.18	787.12	774.	55.18	788.12
	775.	56.18	788.12	775.	57.18	788.12	775.	58.18	787.12	776.	58.18	783.11	776.	58.18	782.11	777.	59.18	783.11
09	778.	59.18	784.11	779.	60.18	791.10	780.	61.18	792.10	782.	61.18	796.10	785.	62.18	799.10	786.	62.18	804.11
	786.	62.18	804.11	788.	62.18	805.11	789.	63.18	807.11	791.	62.18	808.11	793.	62.18	804.12	794.	61.18	805.12
10	795.	61.18	808.10	796.	61.18	809.10	796.	62.18	810.10	795.	62.18	804. 9	794.	62.18	808.10	794.	63.18	800.11
	794.	63.18	800.11	794.	64.18	799.11	793.	64.18	799.11	794.	64.18	799.11	794.	63.18	806.10	794.	63.18	808.10
11	795.	62.18	804. 9	790.	58.17	808. 9	780.	58.17	791. 8	768.	58.17	770. 9	756.	59.17	758. 9	746.	57.17	748. 9
	735.	56.17	738.11	727.	56.17	730.11	718.	57.17	721.11	709.	56.17	712.11	699.	56.17	703.11	692.	58.17	691.12
12	683.	60.17	689.11	670.	61.17	668.12	657.	73.17	665.11	653.	71.17	660.11	647.	68.18	638.10	645.	67.18	634.10
	642.	66.18	630.10	641.	65.18	637.11	641.	64.18	636.11	640.	65.18	632.12	639.	66.18	633.12	639.	66.18	633.12
13	638.	67.18	633.12	635.	65.16	635.11	629.	67.16	634.10	626.	70.16	625.11	624.	73.16	623.11	622.	59.16	620.12
	621.	58.16	621.11	608.	56.15	608.10	602.	61.15	601.10	585.	47.14	577. 8	571.	60.14	561.10	566.	52.14	559.10
14	562.	43.14	557.10	563.	30.14	564.11	565.	20.14	570. 9	567.	19.14	573. 8	570.	20.14	571. 9	574.	18.14	569.10
	578.	20.14	573.10	580.	22.13	575. 9	583.	23.13	578. 9	586.	25.13	580. 9	589.	27.13	583. 9	589.	29.13	584. 9
15	590.	31.13	586. 9	590.	32.13	585. 9	590.	34.13	589.10	586.	34.13	580. 9	580.	36.14	572.10	563.	34.13	555. 9
	551.	36.13	546. 8	535.	31.13	536. 9	519.	31.13	506. 8	510.	27.13	502. 9	495.	31.14	491. 9	494.	26.14	491. 9
16	492.	22.15	492.11	492.	20.15	492.11	490.	21.16	492.11	490.	20.16	492.11	490.	19.16	493.11	491.	18.16	493.11
	492.	16.16	494.11	492.	15.16	494.11	492.	14.16	494.11	493.	13.16	495.11	493.	13.16	495.11	494.	12.16	494.12
17	497.	14.17	495.12	498.	13.17	496.12	499.	13.17	497.12	499.	12.17	497.12	500.	12.17	498.12	500.	11.17	497.13
	500.	11.17	499.14	500.	11.17	499.14	501.	10.17	499.14	501.	10.17	499.14	501.	10.17	500.14	501.	10.17	499.14
18	501.	9.17	500.15	501.	9.17	500.15	501.	9.17	500.15	500.	8.17	500.15	500.	8.17	499.15	500.	7.17	500.15
	500.	7.17	500.14	499.	6.17	499.14	497.	8.17	498.15	497.	9.17	498.15	497.	9.17	498.15	496.	10.17	498.16
19	494.	14.17	498.16	494.	14.17	498.16	494.	13.17	498.16	494.	12.17	497.16	494.	11.18	496.17	494.	10.18	496.16
	495.	8.18	496.16	494.	10.18	496.17	494.	9.18	497.16	495.	8.18	496.14	495.	7.18	496.13	496.	6.18	496.13
20	496.	6.19	496.13	496.	6.19	496.13	496.	6.19	496.14	496.	6.19	497.14	498.	6.20	497.15	498.	6.20	498.13
	498.	6.21	498.15	498.	6.21	498.15	498.	6.21	498.15	498.	6.21	498.15	498.	6.21	498.15	498.	6.21	498.14
21	499.	6.22	499.15	499.	7.22	500.16	500.	7.22	500.16	500.	7.22	501.16	501.	7.22	501.16	501.	7.22	501.16
	501.	7.22	501.15	502.	7.22	501.16	502.	7.22	501.16	503.	7.22	502.16	503.	6.22	502.16	504.	6.22	503.16
22	504.	7.22	503.17	504.	7.22	504.17	505.	7.22	505.17	505.	7.22	505.17	505.	8.22	505.17	505.	8.22	504.17
	505.	8.22	505.16	505.	8.22	504.17	506.	8.22	505.16	506.	8.22	505.16	506.	8.22	505.17	506.	8.22	505.17
23	506.	9.22	506.18	506.	10.22	506.18	507.	11.22	506.18	507.	11.22	506.18	508.	12.22	506.18	508.	14.22	506.18
	508.	16.22	505.18	509.	19.22	507.17	510.	22.22	507.17	513.	26.21	512.15	516.	29.21	516.15	519.	32.21	516.15

Table 11

MONTHLY AVERAGE ON PATH 2 4 FOR MONTH 12 1962

UT	AVER	SDV NO	QAV NO		+ 5 MIN			+10 MIN			+15 MIN			+20 MIN			+25 MIN	
00	545.	43. 8	539. 6	547.	42. 8	542. 6	548.	41. 8	545. 6	549.	40. 8	545. 6	555.	41. 9	552. 5	556.	39. 9	553. 5
	556.	38. 9	554. 5	554.	38. 9	551. 5	551.	38. 9	548. 5	551.	38. 9	546. 5	550.	39. 9	544. 5	550.	41. 9	538. 6
01	553.	42.10	549. 6	555.	43.10	552. 6	558.	44.10	555. 6	561.	47.10	561. 6	565.	50.10	567. 6	582.	36. 9	581. 5
	590.	33. 9	584. 6	596.	33. 9	593. 6	600.	33.10	598. 7	611.	24.10	609. 6	622.	22.10	626. 7	626.	24.10	631. 7
02	631.	27.10	639. 5	634.	29.10	644. 5	638.	31.11	649. 6	640.	31.11	651. 6	642.	32.11	653. 6	644.	32.11	654. 6
	646.	32.11	656. 6	650.	32.11	660. 6	655.	32.11	660. 5	661.	32.11	671. 6	668.	33.11	674. 5	677.	32.11	677. 6
03	687.	33.11	688. 6	696.	35.11	697. 6	706.	38.11	715. 8	712.	38.11	722. 8	718.	39.11	729. 8	723.	39.11	733. 8
	729.	40.11	739. 8	734.	39.11	745. 8	739.	40.11	747. 7	743.	40.11	755. 8	747.	40.11	760. 8	750.	40.11	759. 7
04	754.	40.11	762. 7	757.	41.11	768. 8	760.	43.11	771. 8	761.	44.11	767. 7	763.	46.11	767. 7	765.	45.11	769. 7
	766.	45.11	771. 7	768.	46.11	772. 7	769.	47.11	773. 7	771.	48.11	783. 6	773.	50.11	786. 6	775.	51.11	779. 7
05	777.	52.11	782. 7	779.	51.11	785. 7	781.	50.11	788. 7	781.	51.11	790. 7	781.	52.11	791. 7	781.	51.11	796. 8
	781.	51.11	796. 8	781.	52.11	796. 8	781.	53.11	797. 8	781.	54.11	798. 8	781.	56.11	799. 8	782.	56.11	800. 8
06	783.	55.11	801. 8	785.	54.11	803. 8	787.	53.11	804. 8	787.	55.11	805. 8	787.	57.11	806. 8	800.	45.10	807. 8
	802.	45.10	816. 7	802.	43.10	816. 7	802.	41.10	809. 8	805.	42.10	816. 9	810.	41.11	817. 9	808.	48.11	817. 9
07	807.	57.11	822.10	809.	55.11	825.10	811.	56.11	828.10	813.	58.11	825. 9	815.	60.11	826. 9	815.	62.11	827. 9
	815.	64.11	827. 9	814.	63.11	824. 9	811.	59.12	819.10	811.	54.12	817.10	811.	49.12	815.10	810.	48.12	812.10
08	808.	48.12	804. 9	807.	47.12	802. 9	806.	45.12	800. 9	807.	45.12	802. 9	808.	46.12	804. 9	809.	46.12	811. 8
	809.	47.12	813. 8	810.	48.12	814. 8	810.	50.12	814. 8	809.	51.12	813. 8	808.	52.12	805. 7	808.	53.12	806. 7
09	807.	55.12	807. 7	812.	49.12	810. 7	817.	43.12	808. 8	819.	40.12	816. 7	821.	39.12	819. 7	825.	44.12	834. 9
	830.	50.12	832. 8	833.	46.12	835. 8	836.	41.12	837. 8	837.	38.12	843. 7	839.	35.12	846. 5	840.	35.12	842. 6
10	841.	35.12	844. 6	843.	39.12	838. 7	845.	45.12	839. 7	845.	44.12	839. 7	845.	44.12	838. 7	843.	45.12	840. 9
	841.	46.12	844.10	843.	44.12	851. 9	845.	42.12	848. 8	843.	44.12	846. 8	840.	46.12	843.10	842.	48.12	851. 9
11	844.	51.12	851. 8	843.	51.12	849. 8	841.	51.12	846. 8	833.	47.12	834. 9	825.	44.12	827. 9	814.	42.12	821.10
	803.	43.12	809.10	790.	44.12	801. 9	777.	48.12	791. 7	764.	45.12	767. 6	751.	45.12	742. 7	747.	42.12	739. 7
12	742.	40.12	750. 7	736.	40.12	741. 6	731.	42.12	736. 8	723.	40.12	728. 8	715.	39.12	720. 8	710.	36.12	719. 9
	704.	34.12	710. 8	700.	35.12	704. 8	696.	37.12	705. 7	691.	39.12	689. 7	687.	43.12	698. 7	685.	42.12	696. 7
13	682.	42.12	694. 7	679.	42.11	689. 6	679.	41.11	689. 6	680.	42.11	682. 7	670.	56.12	669. 9	670.	56.12	669. 9
	671.	58.12	667. 9	648.	71.12	643. 8	626.	108.12	617. 9	597.	91.12	597.10	568.	100.12	559.10	562.	72.12	551. 9
14	556.	53.12	559.10	560.	48.12	562.10	564.	44.12	566.10	566.	45.11	568. 9	568.	46.11	565. 8	572.	46.11	569. 8
	576.	46.11	573. 8	582.	44.11	578. 8	589.	42.11	589. 9	595.	33.11	591. 7	603.	28.11	599. 7	607.	26.11	609. 6
15	612.	26.11	610. 5	611.	33.11	614. 7	610.	44.11	616. 9	609.	51.11	616. 9	608.	58.11	617. 9	606.	61.10	615. 8
	606.	62.10	614. 8	583.	54.10	590. 8	559.	81.10	587. 7	548.	75.10	572. 7	536.	71.10	545. 6	524.	62.10	513. 7
16	511.	62.10	503. 6	496.	38. 9	491. 5	488.	27.10	490. 7	489.	22.10	487. 6	489.	17.10	488. 6	490.	14.10	487. 7
	490.	11.10	489. 7	490.	11.10	491. 8	489.	10.10	489. 8	489.	10.10	490. 8	489.	10.10	490. 8	490.	10.10	490. 8
17	490.	9.10	490. 8	491.	8.10	491. 8	492.	8.10	493. 8	492.	7.10	493. 8	493.	7.10	492. 7	494.	7.10	493. 7
	494.	7.10	493. 7	494.	8.10	492. 6	495.	9.10	493. 7	495.	8.10	494. 7	496.	8.10	495. 6	496.	7.10	495. 6
18	496.	7.10	497. 8	497.	7.10	498. 8	498.	6.10	499. 8	498.	6.10	499. 8	498.	6.10	500. 9	498.	6.10	500. 9
	498.	6.10	500. 8	499.	7.10	500. 8	499.	7.10	499. 8	499.	7.10	499. 8	498.	7.10	499. 8	498.	6.10	499. 8
19	498.	6.10	499. 8	498.	6.10	498. 8	498.	6.10	497. 7	497.	6.10	497. 7	497.	6.10	496. 7	497.	5.10	496. 7
	496.	4.10	495. 6	496.	4.10	496. 6	497.	5.10	497. 5	496.	5. 9	495. 8	496.	5.10	496. 7	497.	6.10	496. 7
20	497.	7.10	497. 7	497.	7.10	497. 7	497.	7.10	497. 7	497.	7.10	496. 8	496.	7.10	496. 8	497.	6.10	496. 8
	497.	7.10	498. 7	497.	7.10	498. 7	497.	7.10	498. 7	497.	6.10	498. 8	497.	6.10	497. 7	498.	6.10	498. 7
21	498.	6.10	499. 9	498.	6.10	500. 9	499.	6.10	500. 9	500.	5.10	501. 9	500.	5.10	501. 8	501.	5.10	503. 7
	503.	5.10	504. 7	503.	5.10	503. 8	503.	5.10	504. 6	503.	5.10	503. 7	504.	5.10	504. 6	504.	6.10	506. 7
22	505.	7.10	506. 6	506.	7.10	507. 6	507.	7.10	507. 7	509.	5. 9	509. 5	509.	5. 9	511. 4	510.	6. 9	511. 4
	510.	6. 9	512. 4	511.	6. 9	511. 3	511.	6. 9	510. 4	511.	6. 9	511. 4	511.	7. 9	513. 6	511.	7. 9	513. 6
23	511.	8.10	512. 7	511.	9.10	514. 6	512.	11.10	511. 8	513.	12.10	513. 7	514.	13.10	513. 7	516.	18.10	512. 8
	518.	23.10	511. 9	518.	28.10	512. 8	518.	33.10	513. 8	521.	40.10	513. 8	524.	47.10	510. 9	528.	55.10	511. 9

Table 12

Table 13

RMS phase differences (in degrees) between observations separated by time T

		T (minutes)								
Month 1962	Time of Day	10	20	30	40	50	60	70	80	90
Feb.	Night	11°	16°	23°	25°	25°	28°	27°	29°	31°
"	Day	6°	9°	12°	15°	17°	19°	21°	22°	22°
April	Night	10°	16°	23°	30°	36°	41°	47°	51°	54°
"	Day	10°	15°	19°	23°	28°	33°	37°	40°	43°
June	Night	8°	14°	20°	25°	31°	37°	43°	49°	55°
"	Day	5°	8°	11°	15°	18°	22°	26°	30°	33°
Aug.	Night	14°	22°	30°	37°	42	46°	48°	47°	47°
"	Day	3°	4°	5°	7°	8°	9°	10°	11°	13°
Oct.	Night	11°	18°	23°	27°	29°	33°	36°	40°	43°
"	Day	3°	4°	5°	6°	7°	8°	8°	9°	9°
Dec.	Night	15°	22°	31°	39°	47°	53°	60°	66°	72°
"	Day	3°	4°	6°	8°	9°	11°	12°	13°	14°

DEPARTMENT OF COMMERCE
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